

# Lyme Disease Prevention Toolkit

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## *City of Nashua Division of Public Health and Community Services*

In this toolkit you will find educational materials and guides for children and adults on Lyme disease prevention. There are templates that can be adapted and used by your organization to promote Lyme prevention.



CDC Public Health Image Library, James Gathany

*August 2014*

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# Lyme Disease Prevention Toolkit

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## How to Use this Toolkit

This toolkit contains a section with an overview of Lyme disease and six chapters that target audiences that can be affected by Lyme disease and are at increased risk for Lyme disease. Each chapter has a variety of pamphlets, tools, links and checklists that can be tailored and used in your organization. In Chapter 1, Resources for Community Wide Initiatives, there is a PowerPoint with general information on Lyme disease that can be shared with community members. If you would like someone from the Division to come to your organization to present on Lyme disease, please contact us! This toolkit will also be available on the City of Nashua website and a hard copy with a CD with all the toolkit materials can be requested by contacting the Division. We hope you find this toolkit helpful!

A 30 second promo and a 15 minute segment with public health professionals are available on the Nashua Public Health YouTube website:

<https://www.youtube.com/channel/UCwnBkMZIDIsC8jWLKHgLdw>



City of Nashua  
Division of Public Health and Community Services  
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603-589-4560  
[www.nashuanh.gov](http://www.nashuanh.gov)







# City of Nashua

Division of Public Health and Community Services  
18 Mulberry Street, Nashua, NH 03060

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August 5, 2014

Dear Members of the Greater Nashua Community,

I am pleased to introduce this Lyme Disease Toolkit developed by the City of Nashua's Division of Public Health and Community Services. This toolkit is part of the Division's Lyme disease awareness campaign in the Greater Nashua Public Health Region.

Each year in New Hampshire, more and more people are diagnosed with Lyme disease and prevention is the best approach to managing this growing Public Health concern. This toolkit details prevention practices and tailors them to various sectors of the community including: Schools, Camps, Employers and Employees, Parks and Recreation, Families and Healthcare Providers. For example, the toolkit can be used to organize educational sessions for teachers and counselors, provide fact sheets to employees, provide talking points for discussions with campers about proper tick checking and offer advice to healthcare providers on recognition of Lyme disease.

The enclosed materials will be helpful to you as you discuss them with your staff, clients, students and patients. By using this toolkit, you can lessen the effects of Lyme disease as well as help to ensure a safer environment for residents of our region. For more information, call the Division of Public Health and Community Services at (603) 589-4560.

We hope that you will find this toolkit helpful, and we look forward to our continued partnership.

Sincerely,

Kerran Vigroux, BS, MPH  
Director



## ACKNOWLEDGEMENTS

**Cover Art:** CDC Public Health Image Library, James Gathany

Special thanks to the following organizations for their help and support of the Lyme Disease Prevention Toolkit:

- City of Nashua Division of Public Health and Community Services
- NH Department of Health and Human Services, Division of Public Health Services, Vector Borne Diseases
- Access Nashua and Jackie Lee

Materials from the following were adapted or developed for use in this Toolkit:

- Centers for Disease Control and Prevention
- University of New Hampshire
- Tickencounter.org
- University of Missouri
- State of Connecticut Special Features- Tick Handbook
- California Division of Public Health
- NH DHHS- Division of Public Health Services, Vector Borne Diseases
- American College of Physicians



# Overview of Lyme Disease

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## History

In the early 1970's, Lyme, Connecticut and the surrounding towns started to see an increase of patients with mysterious cases of rheumatoid arthritis. Clinicians and researchers started to investigate these cases and during patient interviews, it was noted that many of the cases were from children that often played in the woods, which made them focus on the blacklegged tick population as a possible link. From here the researchers recorded the time of year and signs and symptoms of the cases to find commonalities and determine the cause of their illness. This eventually led to the identification of *Borrelia burgdorferi*, the bacteria that cause Lyme disease.

For more information: <http://www.cdc.gov/lyme/>

## Epidemiology of Lyme Disease

The Greater Nashua Public Health Region includes the towns of Amherst, Brookline, Hollis, Hudson, Litchfield, Lyndeborough, Mason, Merrimack, Milford, Mont Vernon, Nashua, Pelham and Wilton. According to the U. S. Census, the population of the GNPHR is 205,845. The following tables and charts will make reference to the City of Nashua and the 12 surrounding towns (Figure 1).

**Figure 1 Greater Nashua Public Health Region**

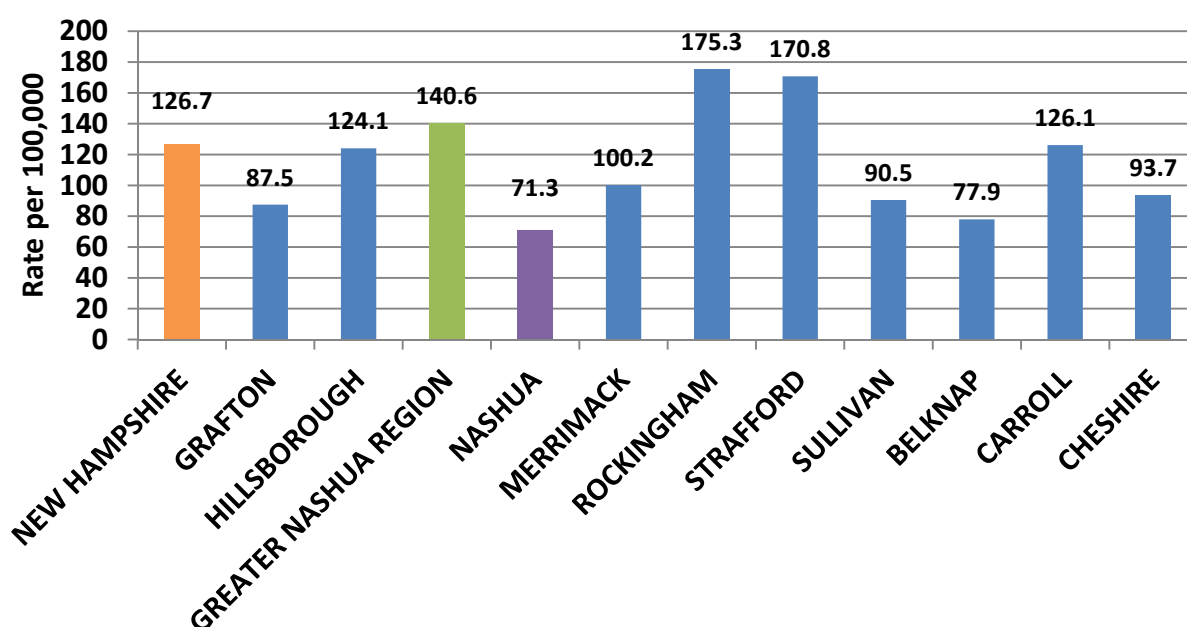


Source: City of Nashua, Assessing Department

In 2012, there were a total of 30,000 reported cases in the U.S. This was the highest reported vector-borne illness for that year. In the same year, New Hampshire had the highest incidence rate (incidence = the number of new cases) for Lyme disease. In 2013, the incidence for the state of New Hampshire was 126.7 cases per 100,000 people, the incidence for the GNPHR was 140.6 cases per 100,000 people and the incidence for Nashua was 71.3 per 100,000 people. The incidence in the GNPHR was significantly higher than Nashua (Table 1). In comparison to the counties in New Hampshire, the GNPHR ranks third in incidence for Lyme disease (Figure 2).

For more Lyme disease statistics from the CDC: <http://www.cdc.gov/lyme/stats/index.html>

**Figure 2 Incidence Rate of Lyme Disease Cases by Geography, 2013**



Source: NH DHHS

In 2013, the Greater Nashua Public Health Region had 287 new cases and the City of Nashua had 62 new cases of Lyme disease (Table 1), which accounts for 17% of Lyme cases in New Hampshire.

**Table 1 Incidence Rate and Number of Cases of Lyme Disease by Geography, 2013**

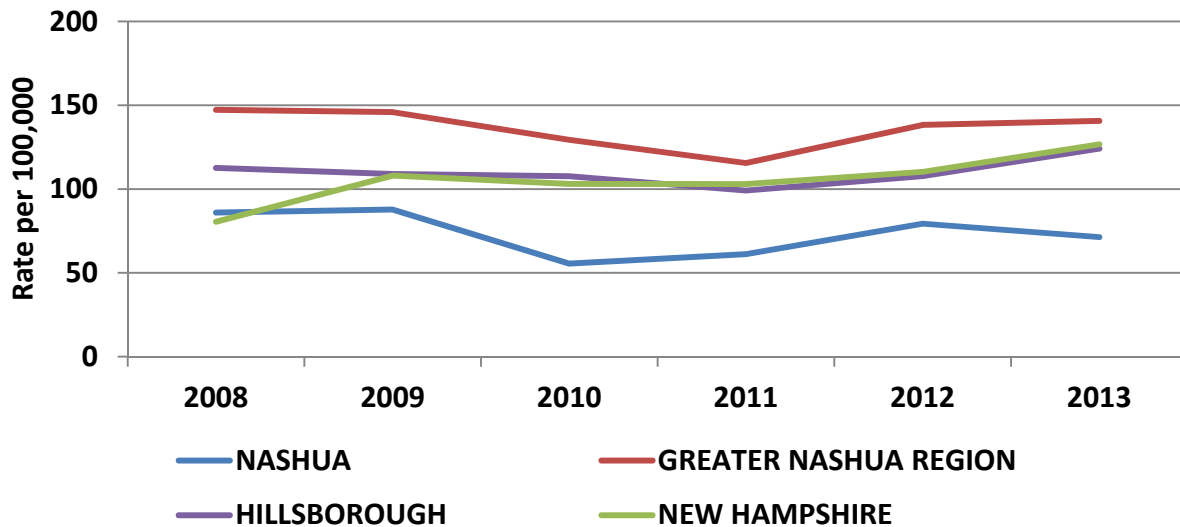
Geography	Number of Cases	Rate (per 100,000)	Confidence Interval
New Hampshire	1,687	126.7	104.6-148.7
Greater Nashua Public Health Region	287	140.6	117.4-163.9
Nashua	62	71.3	54.8-87.9

Source: NH DHHS

***In 2013, there were 1,687 cases of Lyme disease in New Hampshire. It is most common in kids age's five to nine and the onset of symptoms is most commonly seen from June to August.***

The incidence rate of Lyme disease has remained consistent over the past five years with the Greater Nashua Public Health Region having a significantly higher rate than the City of Nashua in 2013. In 2012 and 2013, the rate for the region stayed around 140 cases per 100,000 (Figure 3).

**Figure 3 Lyme Disease Incidence by Year and Geography, 2008-2013**



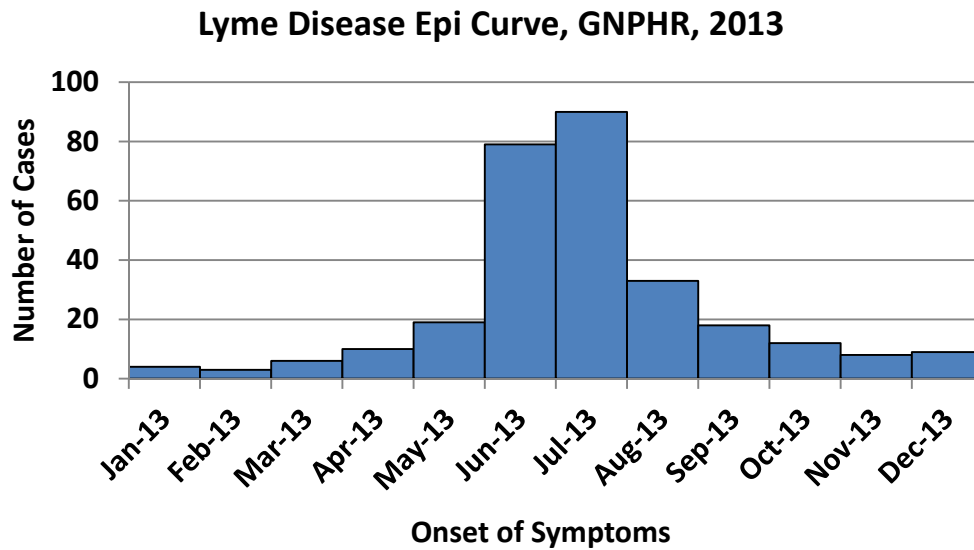
Source: NH DHHS

Nationally, the onset of symptoms in Lyme disease cases mainly occurs in June, July and August which is a similar pattern to what we see in New Hampshire and the Greater Nashua Public Health Region. In 2013, the highest amounts of Lyme disease cases were in the months of June, July and August for Lyme disease cases in the GNPHR as this is when the blacklegged tick is in the nymph stage (Figure 4).





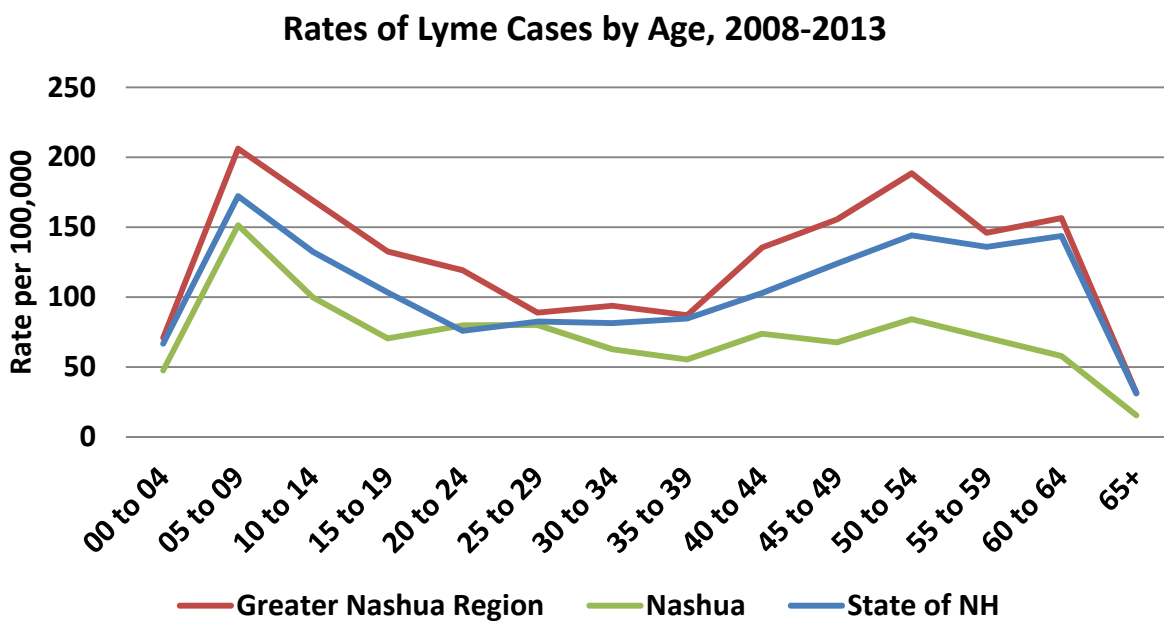
**Figure 4 Epi Curve for Lyme Disease, Greater Nashua Public Health Region, 2013**



Source: NH DHHS

Lyme disease is most common among boys ages five to nine years of age. In Nashua and the Greater Nashua Public Health Region, the age groups that are most affected are ages five to 14 and 50 to 54 (Figure 4). From 2008-2013, 54.7% of cases in the GNPHR were male.

**Figure 4 Rate of Lyme Disease by Age, 2008-2013**

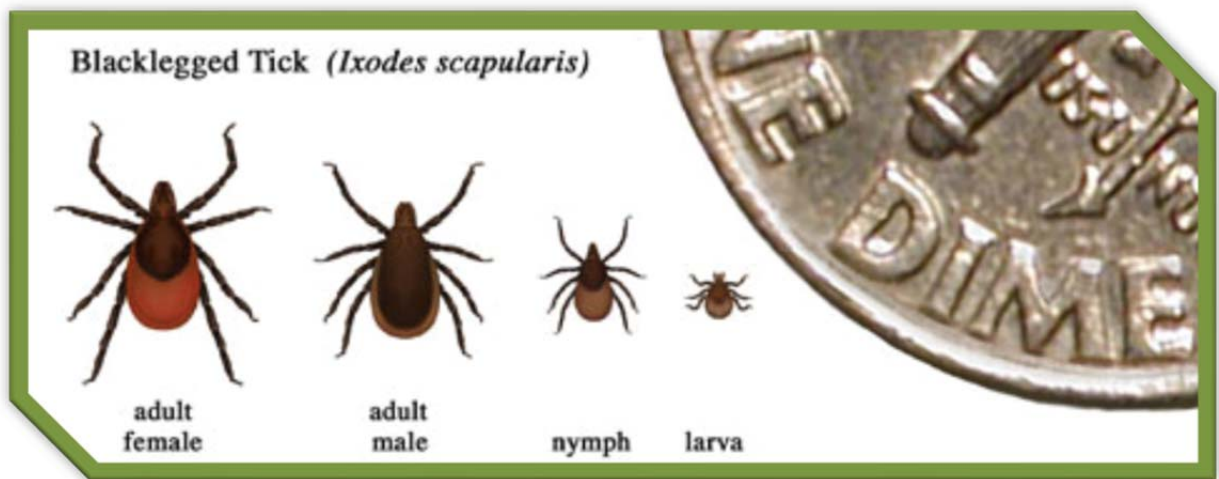


Source: NH DHHS

## Transmission of Lyme Disease

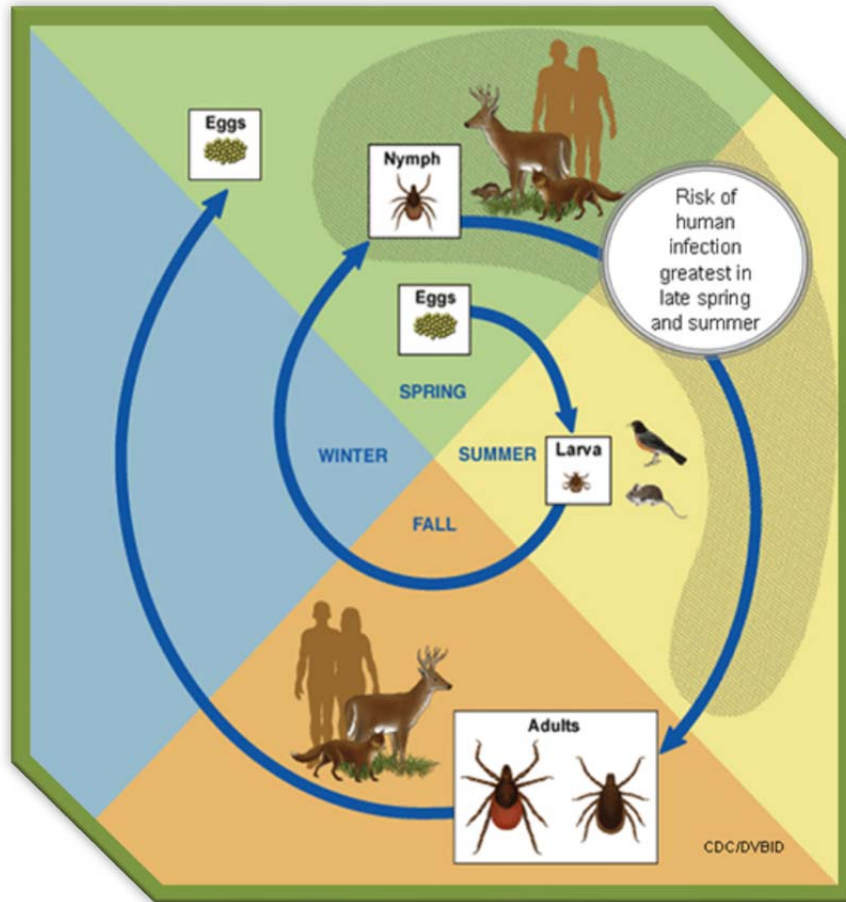
Blacklegged ticks (*Ixodes scapularis* and *Ixodes pacificus*) have a life cycle with four stages which lasts about two years: egg, six-legged larva, eight-legged nymph, and adult (Figures 1, 2). After the eggs hatch, the ticks must have a blood meal at every stage to survive, which means they have to bite a human, animal, reptile, bird or amphibian. Most humans are infected by the nymphs, which are really small and hard to see. They like to feed in the spring and summer. The bacteria that causes Lyme disease, *Borrelia burgdorferi*, is in the stomach of the blacklegged tick and is spread to humans when the tick bites. Ticks can bite any part of the human body- but tend to prefer the warm areas such as the groin, armpits and scalp. In most cases, in order for the bacteria to be transferred from the tick to the human, the tick must be attached to the body for at least 36 hours. If you remove a tick within 24 hours, you significantly reduce your chances of getting Lyme disease. Ticks like to rest on shrubs and grasses and do not fly or jump. When an animal or human passes by the brush, the ticks can climb on and bite. A blacklegged tick can attach and stay attached for a few days while it feeds.

**Figure 5 Stages of blacklegged ticks and size in comparison to a dime**



Source: CDC <http://www.cdc.gov/lyme/transmission/blacklegged.html>

**Figure 6 Lifecycle of blacklegged ticks that transmit Lyme Disease**



Source: CDC <http://www.cdc.gov/lyme/transmission/blacklegged.html>

## Frequently Asked Questions about Transmission

### Can I get it from my dog or cat?

Dogs and cats can get Lyme disease but there is no evidence showing that they can spread the disease to their owners. Protect your pet by using tick control products that are made for pets. Ticks are often brought into the home by the family pet, so frequent tick checks are recommended.

### Can I get it from eating meat, like venison or squirrel meat?

You cannot get Lyme disease by eating venison or squirrel meat but remember to use good food safety practices such as cooking the meat thoroughly. Ticks may be present on the animal and therefore you should perform a tick check on yourself after handling any game animals.

**Can I get Lyme disease through a blood transfusion?**

There have been no cases of Lyme disease linked to blood transfusions. However, the bacteria that cause Lyme disease can live in blood that is stored for blood donations, so you should not donate blood if you are being treated for Lyme disease.

**Do other ticks transmit Lyme disease?**

Only the blacklegged tick has been associated with Lyme disease in the eastern United States. The Lone star ticks, American dog tick, Rocky Mountain wood tick and the brown dog tick are not known to transmit Lyme disease.

**Can Lyme disease be transmitted person-to-person?**

There is no evidence that Lyme disease can be spread from person-to-person through sexual or any other contact. Because family members usually share the same environment where infected ticks may be present, it is possible for more than one family member to become infected. This does not mean, however, that the disease is spread from person to person.

**I am pregnant and I have Lyme disease. What Should I do?**

If you have been bitten by a tick and think you might have Lyme disease, contact your healthcare provider right away to discuss treatment options. There have been no reports on Lyme disease transmission from breast milk. Antibiotics given to a pregnant woman have not been shown to be harmful to the fetus.

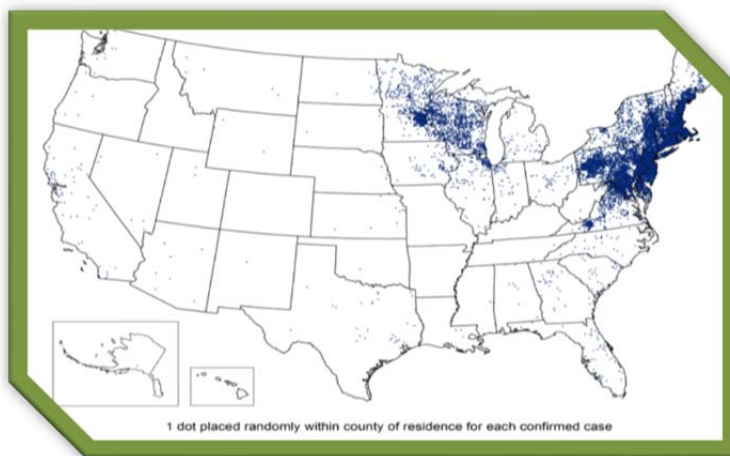
For more information, visit: <http://www.cdc.gov/lyme/transmission/index.html>;  
<http://www.cdc.gov/lyme/fag/index.html>



## Where and When

Blacklegged ticks are found mainly in the Northeastern Region of the United States, and thus Lyme disease is also found here (Figure 3). These ticks are found in New Hampshire all year long, which means a person can contract Lyme disease from a tick all year long, a fact that few people are aware of. However, Lyme disease is contracted more frequently in the spring and summer months from April to August because this is the time of year when blacklegged ticks are in the nymph stage of their life cycle and are most actively biting and spreading *Borrelia burgdorferi*.

**Figure 7 Map of Lyme Disease Cases**



Source CDC <http://www.cdc.gov/lyme/stats/maps/map2012.html>

## Signs and Symptoms of Lyme Disease

\*If you have any of the following symptoms you should seek medical attention

- Early localized stage (3-30 days after bite)
  - Some people will develop a red expanding bull's eye shaped rash that may appear anywhere on the body or at the tick bite location, this is called Erythema Migrans (Figure 4)
  - Fatigue (feeling tired), chills, fever, headache, muscle and joint aches, and swollen lymph nodes may also occur
  - Not all people with Lyme disease develop the "bull's-eye" rash



**Figure 8 Erythema Migrans**



- Early disseminated stage (days to weeks after bite)
  - More erythema migrans may appear on the body
  - Loss of muscle tone on either or both sides of the face called facial palsy (Figure 5)
  - Severe headaches and a stiff neck
  - Pain and swelling in the joints
  - Shooting pains
  - Sudden changes in heartbeat that cause dizziness

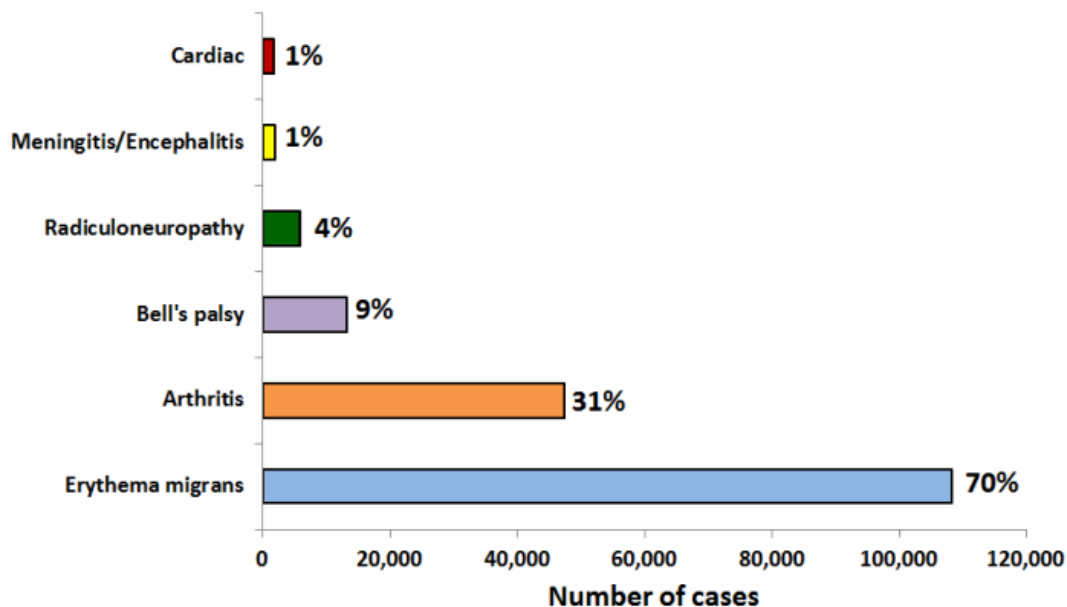
**Figure 9 Facial palsy**



- Late disseminated stage (months to years after tick bite)
  - Swelling of the joints (arthritis)
  - Neurological complaints (tingling in hands or feet, numbness, short-term memory loss, shooting pains)
- Post Treatment Lyme Disease Syndrome
  - Some patients, about 10%, will have symptoms that last months to years even after they have been treated with antibiotics
  - There is some evidence that there may be an autoimmune response where the person's body is still responding to the infection and causing damage to the tissues in the body
  - Symptoms can include memory loss, loss of focus and muscle and joint pain and fatigue

Nationally, 70% of cases presented with erythema migrans, 31% developed arthritis, and 9% had Bell's palsy (Figure 10). From 2011-2013, about 60% of Lyme disease cases in the GNPHR had erythema migrans.

**Figure 10 Clinical Symptoms of Lyme Disease in the US, 2001-2010**



\*For more information on symptoms visit:

[http://www.cdc.gov/lyme/signs\\_symptoms/index.html](http://www.cdc.gov/lyme/signs_symptoms/index.html);

<http://www.cdc.gov/lyme/stats/chartstables/casesbysymptom.html>

## Tick Check Instructions

Before going outdoors:

- Expect ticks if you will be in moist or humid environments near wooded or grassy areas
- Use a repellent containing 20-30% DEET every several hours of being outside, making sure to follow the instructions printed on the label.

After going outdoors:

- Check all clothing and objects for lingering ticks
- Shower after coming inside
- Check your body everywhere making sure not to forget under the arms, in and around the ears, in the belly button, back of the knees, hair and scalp, groin, and around the waist

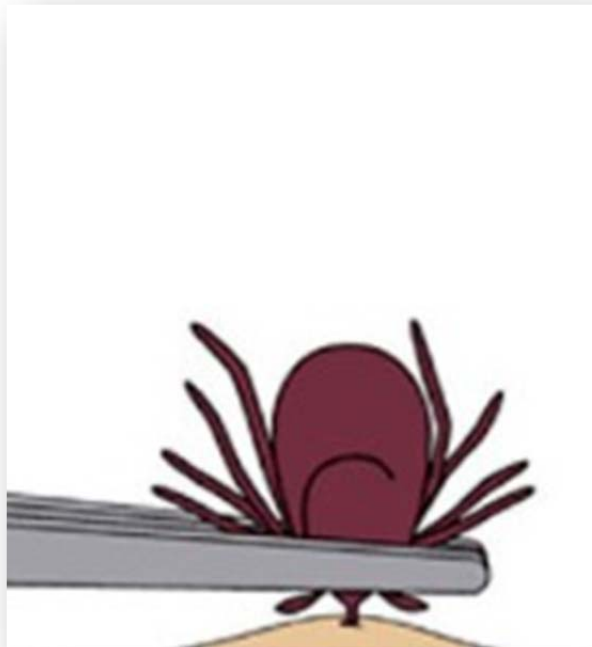
\*For more information: [http://www.cdc.gov/lyme/prev/on\\_people.html](http://www.cdc.gov/lyme/prev/on_people.html)

## Tick Removal and Disposal

If you find a tick attached to your skin follow these simple steps:

1. Grasp the tick with fine-tipped tweezers as close to the skin as possible.

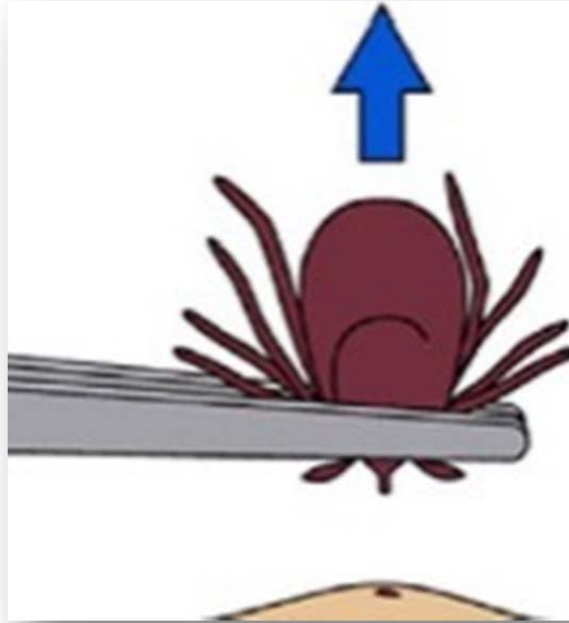
**Figure 11 Removing a tick**





- 
2. Pull outward with steady pressure. Make sure not to twist or jerk the tick.

**Figure 12 Removing a tick**



- 
- 
3. Clean the bite area thoroughly and wash your hands using rubbing alcohol, iodine scrub, or soap and water.
4. Dispose of the tick by submersing it in alcohol or flushing it down the toilet.
5. The City of Nashua Division of Public Health and Community Services will identify ticks. However, they will not test if they are positive for the bacteria that causes Lyme disease.

\*For more information visit [http:// www.cdc.gov/lyme/removal/index.html](http://www.cdc.gov/lyme/removal/index.html)

## Choosing a Repellent

When choosing a repellent to prevent tick bites you'll want to choose one that contains 20-30% DEET. This carries a scent that deters ticks from biting. You may use repellents containing Picaridin or oil of lemon eucalyptus in replace of DEET. Do not use DEET on children under 2 months of age and do not use oil of lemon eucalyptus on children under 3 years of age. Assist children with applying repellent and do not put it on their hands, eyes or mouth. Clothing and gear such as tents can be treated with 0.05% permethrin.

- For more information visit [http://www.cdc.gov/ticks/avoid/on\\_people.html](http://www.cdc.gov/ticks/avoid/on_people.html)

- For more information on repellents and kids, visit:  
<http://www.healthychildren.org/English/safety-prevention/at-play/Pages/Insect-Repellents.aspx>
- For more information on repellents visit <http://cfpub.epa.gov/oppref/insect/>



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## State Resources, Statistics and Information

### New Hampshire Department of Health and Human Services

- Lyme and other Tick-borne Diseases: <http://www.dhhs.nh.gov/dphs/cdcs/lyme/>



***Over 60% of ticks in Hillsborough County  
have tested positive for the bacteria that  
causes Lyme disease***



- Lyme Disease Data: <http://www.dhhs.state.nh.us/dphs/cdcs/lyme/publications.htm>

A A A an official NEW HAMPSHIRE government website

# dhhs New Hampshire Department of HEALTH AND HUMAN SERVICES

Families & Children Women Teens Adults Seniors People with Disabilities

Translate this page

- Home
- About DHHS
- Divisions/Offices
- Media
- Statistics
- Online Tools
- Vendors / RFP
- Job Opportunities
- Topics A to Z
- Contact

## Publications and Data for Lyme and Other Tickborne Diseases

### Publications

The New Hampshire Department of Health and Human Services, Division of Public Health Services, has materials available to educate the public about how to protect against tick bites.

Limited quantities of the materials listed below may be available. Please call (603) 271-4496 or 1-800-852-3345, extension 4496 for more information.

- Tick Cards
- Stop Mosquito and Tick Bites
- Protect Yourself and Your Family Poster
- Bug News for Kids
- Protect Yourself from Ticks Where You Work! June 2014
- Free Lyme disease related materials are published by the Centers for Disease Control and Prevention

### Maps and Reports

The NH Department of Health and Human Services, Division of Public Health Services, updates Lyme disease data annually in the spring and provides the following maps and reports:

Maps	Reports by County
<a href="#">2013</a>	<a href="#">2008-2013</a>
<a href="#">2012</a>	<a href="#">2008-2012</a>

### Program Information

- Lyme Disease
- Disease Reporting Forms
- Health Alerts
- Contact Communicable Disease Control & Surveillance

### Related Resources

- Centers for Disease Control & Prevention
- Choosing an Insect Repellent
- Connecticut Tick Management Handbook
- Biology and Management of Ticks in NH

### Prevent Lyme disease!

- Wear repellent
- Check for ticks daily
- Shower soon after being outdoors

### ***Lyme Disease Fact Sheet:***

This fact sheet provides quick answers to all of the basic questions that one needs to know about Lyme disease in two pages. This fact sheet could be placed in public bulletin boards for employees/ patrons to read.

<http://www.dhhs.nh.gov/dphs/cdcs/lyme/documents/lyme.pdf>

**New Hampshire**  
Department of  
Health and Human Services  
Division of Public Health Services

# Fact Sheet

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## Lyme Disease

**What is Lyme disease?**  
Lyme disease is caused by a bacterium, *Borrelia burgdorferi*. It was first identified in the U.S. in a cluster of children in Lyme, Connecticut in 1977, hence the name. The bacteria are transmitted to humans by the bite of infected deer ticks and cause more than 20,000 infections in the United States each year.

**Who gets Lyme disease?**  
Lyme disease can affect people of any age. Persons who spend time in wooded or grassy areas are at greater risk of disease because of the increased exposure to ticks. This includes people who work or play in their yard, participate in recreational activities away from home, such as hiking, camping, fishing, and hunting, or who engage in outdoor occupations, such as landscaping, brush clearing, forestry, and wildlife and parks management.


**When are ticks most active?**  
Deer ticks in the nymphal, or juvenile, stage, which are less than a tenth of an inch long (<2 mm), are active from May until August. This is the stage most likely to bite and infect people. Adult ticks, which are about an eighth of an inch in size (2-3 mm), are most active in middle to late fall. Our recent lab studies show that about 60% of the deer ticks in many parts of New Hampshire are infected with Lyme disease.

**How is Lyme disease transmitted?**  
Lyme disease is spread in New England by the bite of the black-legged tick (*Ixodes scapularis*). Other species transmit the bacteria in other parts of the country. Ticks feed by inserting their mouths into the skin of a host and drawing blood. If a tick feeds on an animal infected with Lyme disease and then on a person, it can transmit the bacteria to the person. There is no evidence that Lyme disease is transmitted from person to person. For example, a person cannot get infected from touching, kissing, or having sex with a person who has Lyme disease.

**What are the symptoms of Lyme disease?**  
The illness usually occurs during the summer months. Often, but not always, people develop a large circular rash around or near the site of the tick bite. Multiple rash sites may also appear. Other symptoms such as chills, fever, headache, fatigue, stiff neck, swollen glands, and muscle and/or joint pain may be present. These may last for several weeks. If Lyme disease is left untreated, complications such as meningitis, facial palsy, arthritis, and heart abnormalities may occur and other body systems may be affected. Swelling and pain in the large joints may recur over many years. These later symptoms may appear in people who did not have early symptoms or did not recognize them.

## University of New Hampshire

- Biology and Management of Ticks in New Hampshire:  
[http://extension.unh.edu/resources/files/Resource000528\\_Rep1451.pdf](http://extension.unh.edu/resources/files/Resource000528_Rep1451.pdf)
  - The University of New Hampshire produced this resource in order to help you learn what ticks look like, how they live, what diseases they spread and how to prevent these diseases.



UNIVERSITY  
of NEW HAMPSHIRE  
Cooperative Extension

Education Center & Info Line  
practical solutions to everyday questions  
Toll free Info Line 1-877-398-4769  
M-F • 9 AM - 2 PM  
W • 5 - 7:30 PM


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## Biology and Management of Ticks in New Hampshire


There are two families of ticks, the *Ixodidae* (hard ticks) and *Argasidae* (soft ticks). Those of importance to hikers, campers, and pet owners are in the family *Ixodidae*. Therefore, this publication covers species of that group. Several species are important because they bite people and/or pets. Some can also transmit diseases to the people or pets they bite.

This publication will help you learn what ticks look like, how they live, the diseases they spread, how to manage tick problems, and how to protect yourself from tick-borne diseases.

### New Hampshire Tick Species



Blacklegged tick larvae & pinhead



Questing American dog tick

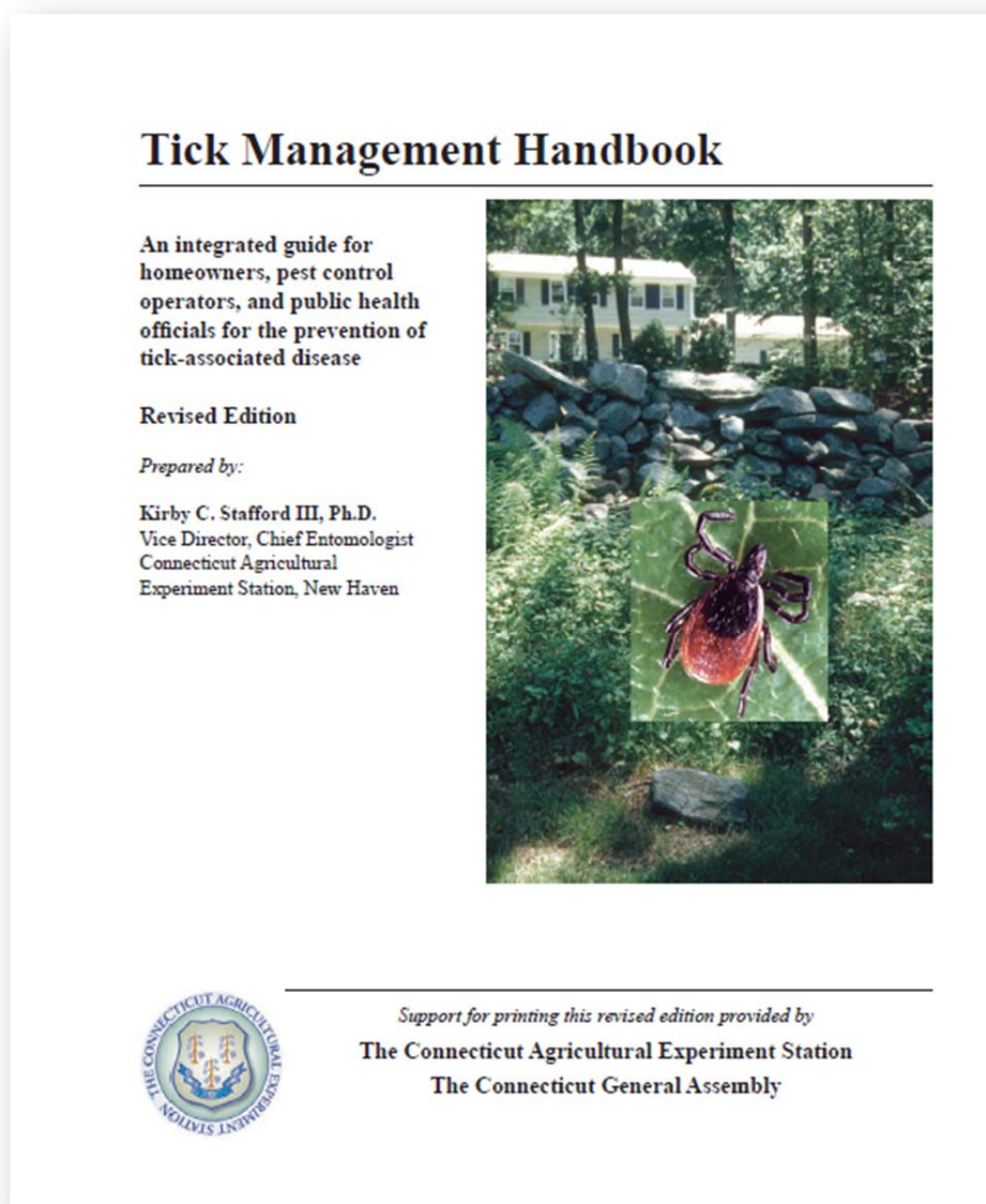
The American dog tick, *Dermacentor variabilis*, is the most frequently encountered tick in New Hampshire. It is about 1/8" (4-5mm) long, brown and tan, with an obvious mottled pattern of surface markings on the back (opposite the belly side). It is a "three-host tick," so named because it must find and feed on an animal three times to complete its two-year life cycle. This species has now spread to every county in the state. Parts of Cheshire, Sullivan, Grafton and northern Coos don't have many.

The dog tick begins life as an egg, one of hundreds laid in a mass on the ground by a female tick. The egg hatches into a larva, which has six legs. The larva remains on the ground in leaf litter, or in low vegetation while waiting for a small mammal to brush by. It attaches to the animal and feeds for



## ***The Connecticut Agricultural Experiment Station, The Connecticut General Assembly***

- Tick Management Handbook:  
[http://www.ct.gov/dph/lib/dph/infectious\\_diseases/lyme/TickManagementHandbook2007.pdf](http://www.ct.gov/dph/lib/dph/infectious_diseases/lyme/TickManagementHandbook2007.pdf)
  - This is a guide for homeowners, pest control operators and public health officials on how to prevent tick-borne diseases. It was drafted by the Connecticut General Assembly to be used as a guide in preventing tick-borne diseases.





## Online Resources for Ordering Lyme Prevention Materials

### *Centers for Disease Control and Prevention Info (CDC\_INFO) On Demand*

- Order or download books, fact sheets, pamphlets, and educational materials
- Search for “Vector-borne Diseases” or “Vector-borne Diseases – Lyme Disease”
- Website: <http://wwwn.cdc.gov/pubs/CDCInfoOnDemand.aspx>

The screenshot displays the CDC-INFO on Demand website interface. At the top, the CDC logo and tagline "CDC 24/7: Saving Lives. Protecting People. Saving Money through Prevention." are visible. A search bar is located in the top right corner. Below the header, a navigation bar shows an "A-Z Index" with letters A through Z and a hash symbol. The main heading is "CDC-INFO on Demand - Publications".

On the left side, there is a sidebar with the following sections:

- CDC-INFO**
  - Stacks
  - Contact CDC-INFO
  - Comuníquese con CDC-INFO
- Top 10 Orders**
  - Current Month
  - 6 Months
  - Current Year
  - All Time
- Heads Up Parent/Athlete Information Sheet** (with a thumbnail image)

The main content area features a search filter section titled "FILTER PUBLICATIONS BY:" with dropdown menus for "Programs" (All Programs), "Languages" (All Languages), and "Material Type" (All Material Types). A "Search for Text" field contains "Lyme Disease". Below the filters, it states "Found 3 Publications that match your search (viewing 1 - 3)." and includes a "Publications Per Page" selector set to 10.

The search results are displayed in a table-like format:

Title	Pub ID	Program	Description	Language	Material Type	Order Amount	Limit	Action
<b>Lyme disease prevention and tick removal bookmark</b>	221291	Vector-Borne Diseases -- Lyme Disease	Laminated bookmark. Front: Tick bite prevention tips Back: Tick removal instructions	English	Bookmark	0	Limit: 100	Add to Cart
<b>Lyme disease: What you need to know</b>	221574	Vector-Borne Diseases -- Lyme Disease	A brochure that provides answers to the most common Lyme disease questions: How is it spread? Where is it found? How is it prevented? How is it diagnosed? How is it treated?	English	Brochure			

Additional elements on the right side of the page include:

- Links: Email page link, Print page, Get email updates, Subscribe to RSS, Listen to audio/Podcast.
- Cart** section: Limit 18 separate publications, Cart is Empty, Publications: 0, Items: 0, Check Out button.
- Search Order Status** section: Go button, Order #, Order Date, List Ordered Items dropdown.
- Contact Us:**
  - Centers for Disease Control and Prevention, Clifton Rd. Atlanta, Atlanta, GA 30333
  - 800-CDC-INFO (800-232-4636)
  - TTY: (888) 232-6348

### *Tick Encounters Shower Card*

- You can purchase this shower card and place it in your shower as a reminder of how to check yourself properly for ticks
- Website: [http://www.tickencounter.org/tepp/dailytickcheck\\_showercards](http://www.tickencounter.org/tepp/dailytickcheck_showercards)

University of Rhode Island  
**TickEncounter** Resource Center

HOME ABOUT TICKSMART F.A.Q. TICK IDENTIFICATION PREVENTION TICKSPOTTERS BLOG PARTNER RESOURCES NEWS

TickEncounter Prevention Partner [What is the TEPP Program](#) | [Partnership Levels](#) | [Become A Partner](#) | [Current Prevention Partners](#) | [TEPP Stories](#)

**TickEncounter Prevention Partner**

Partner with TERC to prevent tick bites and tick-borne disease in your community.

**TickSmart™ Daily TickCheck Shower Cards help prevent disease by reminding people to do a daily tick check.**

You've just taken a shower or bath. You're already naked. Now, just look...and use our guide to know where to be sure to look and what you are looking for. (TickEncounter advises doing a full-body check at least once a day during active tick seasons-shaded areas highlight body regions where ticks are commonly found biting)

**Only blacklegged ticks transmit Lyme disease.**  
(Ixodes scapularis or "blacklegged ticks" or "deer ticks")  
(Ixodes pacificus or "western blacklegged ticks")

**Other ticks you might find biting**  
Lone star ticks American dog ticks

**Daily TickCheck Shower Card**

**Be TickSmart! Stay TickSafe! Check for Ticks Every Day.**

1. Scalp 5. Waist & Back

## Tick Check Diagram



Source: <http://extension.missouri.edu/news/DisplayStory.aspx?N=2001>

## Social Media Blurb: Facebook, Twitter, Etc.

### *Tips*

When posting to social media it is best to keep things simple and include capturing images with links to credible information. With each of the posts below include <http://www.cdc.gov/lyme/> as well as an image that you think would capture attention such as the one below.



Source: [http://s3.hubimg.com/u/6902862\\_f496.jpg](http://s3.hubimg.com/u/6902862_f496.jpg)

### *Facebook Posts*

“Lyme Disease is on the rise and the best way to avoid it is preventing it! Remember to check for ticks everywhere after going outside... Don’t forget to check your furry friends too!”

“60% of ticks in NH carry Lyme disease- always check yourself and others for poppy seed sized ticks after being outside”.

“We want you to know that Lyme disease is a serious problem in our region. Beware of ticks outdoors and remember to check for ticks after being outside”.

### *Twitter Posts*

“Spring and summer are here! Watch out for ticks and make sure to check yourself!”

“If you’re going outside keep ticks in mind! The best way to stop Lyme disease is to prevent it!”

“Stop Lyme disease by wearing repellent, wearing the proper clothing and checking yourself!”



### *Widgets*

To add a widget on Lyme disease to your website, visit the CDC Lyme Disease Toolkit website at: <http://www.cdc.gov/lyme/toolkit/index.html>



## Template Newsletter Article

Lyme disease is caused by a bacteria called *Borrelia burgdorferi*, which is transmitted to humans through the bite of infected blacklegged ticks, also known as blacklegged tick ticks. In 2012, New Hampshire was reported to have the highest incidence of Lyme disease in the United States, and in recent years, Hillsborough and Rockingham counties have accounted for nearly 70% of all confirmed Lyme cases in New Hampshire. However, proper education and prevention can help reduce the number of Lyme disease cases.

The blacklegged tick is most active from early spring to late fall, but preventative measures should be taken year round. If you are planning on spending time outdoors then remember to wear a good repellant, such as one containing DEET. The CDC recommends a repellant containing 20-30% DEET on exposed skin and clothing, as DEET can be effective for several hours at this concentration. It is equally important to reapply the repellant as needed by following the product instructions. Parents should apply repellants containing 20-30% DEET to their children and make sure to avoid the hands, eyes, and mouth. DEET shouldn't be applied to babies under 2 months of age. Light colored clothing should be worn to easily spot ticks, and pants should be worn and tucked into socks to prevent ticks from crawling up the legs. When hiking, remember to stay on established paths, as this reduces your chance to encounter ticks. Check for ticks on your body, and be mindful of hard to see places such as armpits, scalp, groin, and the back of knees. After coming indoors, take a shower to wash away any ticks that may be crawling on you, and if any ticks are found on you, or your clothing, put your clothes in the dryer under high heat for 60 minutes to kill any remaining ticks.

For more information on Lyme disease, tick removal, and prevention methods for pets and backyards please visit the CDC's website on Lyme disease at [cdc.gov/lyme](http://cdc.gov/lyme). The Nashua Environmental Health Department is also available to identify ticks and answer any questions you may have. The Nashua Environmental Health Department can be reached Monday through Friday 8AM-5PM at 603-589-4530.

## Distributable E-mail

Subject- Spring is Here, Let's Prevent Lyme Disease!

Text-

Hello,

With the nice weather right around the corner, we would like to share some tips on preventing Lyme Disease!

- Try to avoid walking in the deep woods or bushy tall grass areas and walk in the middle of all paths
- Check yourself and kids for ticks in the shower after each time you are outside for a prolonged period of time (don't forget the groin, scalp and armpits)
- Check pets for ticks frequently
- Wear long sleeves and pants along with bug spray containing at least 20% DEET.

In the event that you do find a tick on yourself or others, you can remove it by finding a pair of fine tipped tweezers, gripping the tick as close to the skin as possible, and pulling straight away from the body, making sure not to twist the tick. If you found and removed a tick that may have been attached for 36 hours or longer, contact your healthcare provider and watch for a "bulls eye" looking rash or flu-like symptoms. If you experience these, you should consult a healthcare provider, making sure to inform them that you have been bitten by a tick. For more information, you can visit the Centers for Disease Control and Prevention website (<http://www.cdc.gov/lyme/>) or call the City of Nashua, Environmental Health Department at (603) 589-4530.

## Checklist for Creating a Tick Free Space

- ☐ Clear tall grasses and brush around buildings and at the edges of the playground or yard
- ☐ Place a 3ft wide barrier of wood chips and gravel between the edge of the playground or yard and the woods as well as around all play equipment
- ☐ Maintain the playground by mowing the lawns, raking up leaf litter and removing all trash
- ☐ Remove any tick breeding grounds such as old mattresses, furniture or cars from the playground or yard
- ☐ Keep all play equipment away from the edges of wooded areas
- ☐ Keep all tick carriers such as mice, deer and stray dogs out of the playground or yard
- ☐ Safely spray a small amount of acaricide once every May or June around the border of the playground or yard to keep ticks away

\*For more information visit [http://www.cdc.gov/ticks/avoid/in\\_the\\_yard.html](http://www.cdc.gov/ticks/avoid/in_the_yard.html)



Source: [http://www.ct.gov/caes/lib/caes/documents/special\\_features/tickhandbook.pdf](http://www.ct.gov/caes/lib/caes/documents/special_features/tickhandbook.pdf)



## Before and After Pictures of Lawns Controlled for Ticks

A. Yard before landscape intervention.



B. Yard after landscape intervention.



Source: [http://www.ct.gov/caes/lib/caes/documents/special\\_features/tickhandbook.pdf](http://www.ct.gov/caes/lib/caes/documents/special_features/tickhandbook.pdf)

*If you think you may have contracted or become infected with Lyme disease, contact your healthcare provider to discuss treatment options as soon as possible.*

## CDC Pamphlet (PDF)

- A pamphlet containing information on how Lyme disease is spread, where it is found, how it is prevented, how it is diagnosed and how it is treated.
- <http://www.cdc.gov/lyme/resources/brochure/lymediseasebrochure.pdf>



## Trail Sign

- Post this trail sign in parks, trails, playgrounds, schools, camps, backyards and any area outdoor area that may have ticks. PDF of Trail Sign:

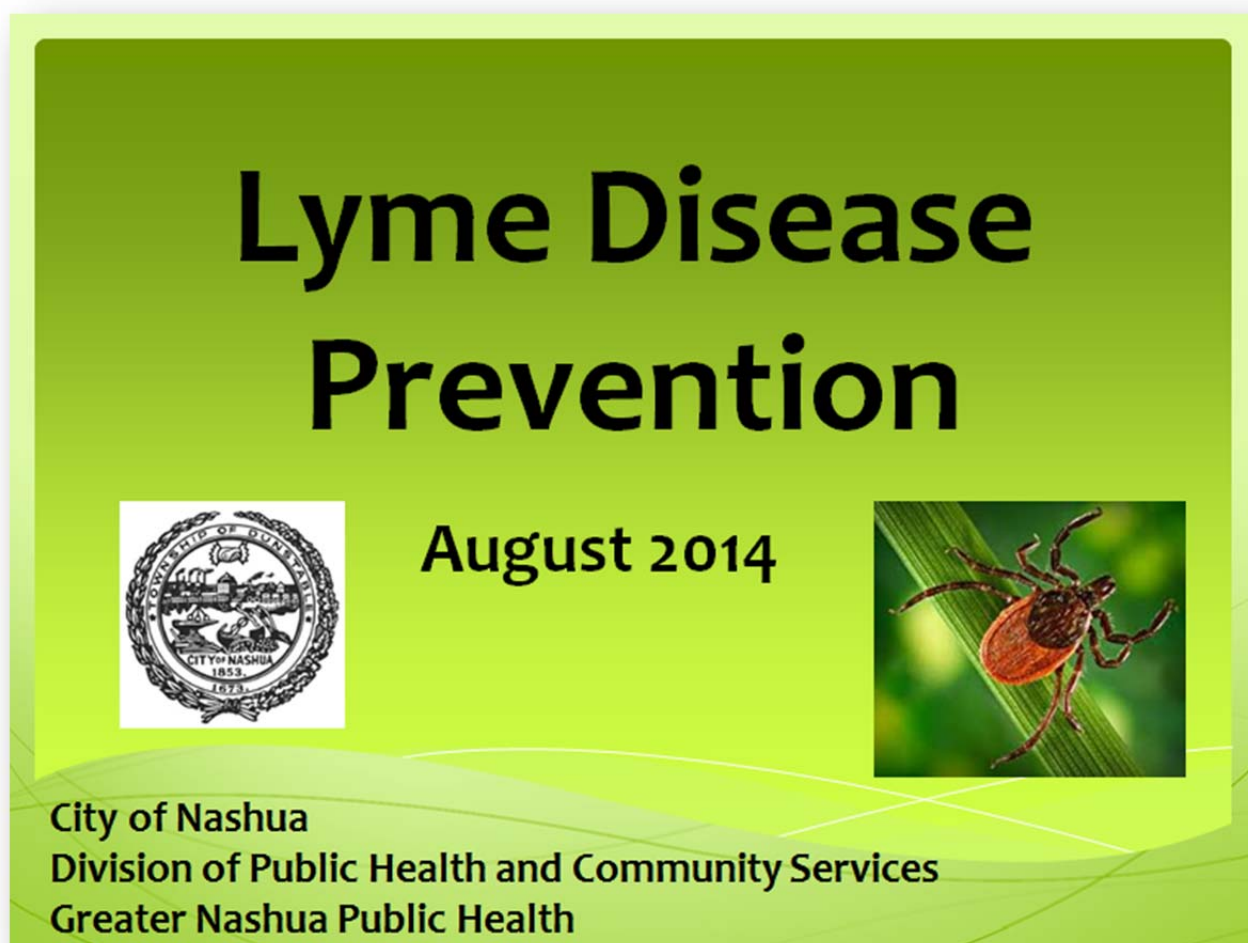
<http://www.cdc.gov/lyme/resources/toolkit/2%20Color%20Trail%20Sign.pdf>





## Lyme Disease PowerPoint

- A brief PowerPoint that can be presented in a quick meeting or sent via email. This can be downloaded from the City of Nashua, Division of Public Health and Community Services website at: <http://bit.ly/nashuahealtheducation>



# Resources for Schools, Childcare Centers and Camps

Lyme Disease Fact or Fiction for Teens.....	2
Lyme Disease Prevention Checklist for Schools, Universities, Summer Camps and Childcare Centers .....	4
Lyme Disease Poster and Bookmarks (PDF).....	7
Coloring Pages and Word Search (PDF) .....	8

## Lyme Disease Fact or Fiction for Teens

<http://www.cdc.gov/lyme/quiz/q2/index.html>

### Instructions:

Below is a list of true/false statements about Lyme disease. Read aloud each statement to the class and ask if they think it is true or false.

The answers for each statement are below.

1. Lyme disease was first discovered in Lyme, New Hampshire. **F**

**False:** Lyme disease only became apparent in 1975 when mothers of a group of children who lived near each other in Lyme, Connecticut, made researchers aware that their children had all been diagnosed with rheumatoid arthritis. This unusual grouping of illness that appeared "rheumatoid" eventually led researchers to the identification of the bacterial cause of the children's condition, which was then called "Lyme disease" in 1982.

2. Lyme disease occurs throughout the United States. **F**

**False:** Although Lyme disease cases have been reported from all 50 states, these reports reflect where the patient lives, which is not necessarily where he or she became infected. In truth, infected ticks of the type that transmit Lyme disease are not found in many states. In the states without infected ticks that spread Lyme disease, infections are usually the result of travel to a state where the disease is common, especially states in the northeast and upper Great Lakes regions. Ticks transmit diseases other than Lyme disease, so you should know how to protect yourself no matter where you live.

3. Lyme disease is transmitted from person to person. **F**

**False:** The only proven means of Lyme disease transmission is through the bite of a *Borrelia burgdorferi* infected tick. Although you may have heard that Lyme disease can be transmitted from person to person through breast milk or sexual contact, there is no scientific evidence for either of these routes.



The ticks that transmit Lyme disease are very small and often go unnoticed. Because family members usually share the same environment where infected ticks may be present, it is possible for more than one family member to become infected. This does not mean, however, that the disease is spread from person to person.

4. The best way to remove an attached tick is by applying petroleum jelly. **F**

**False:** Grasp the tick close to the skin with tweezers and pull straight away from the skin. Do not burn off or use other homeopathic methods such as applying nail polish or petroleum jelly as they may actually cause transmission of Lyme disease.

5. A tick must be attached to a person's skin for more than 24 hours before it can transmit Lyme Disease. **T**

**True:** Ticks that transmit Lyme disease can take 3 or more days to feed fully. If the tick is infected, the chance of transmission increases the longer that the tick remains attached to the person. Therefore, it is important to conduct tick checks after working or recreating in tick infested areas, and promptly removing any ticks you find.

**Kids 5-9 years old have the highest number of cases of Lyme disease nationwide- education and prevention are our best tools to stop early age Lyme.**

## Lyme Disease Prevention Checklist for Schools, Universities, Summer Camps and Childcare Centers

Use this tool to determine which actions you already take to promote Lyme disease prevention and which actions you can take at your organization. Place an “x” in the appropriate column as you fill out the checklist. For actions you want to consider implementing, identify the appropriate person in your organization that can complete the action and assign a timeline for completing the action.

Action Item	Already Being Done	Consider Implementing (Identify Lead for Action)	Not Applicable to my organization
Review the Lyme Prevention Toolkit for information and to become familiar with available resources		N/A	N/A
<b>Education</b>			
Post prevention tips on Facebook, Twitter and other social media sites <ul style="list-style-type: none"> <li>Reference the Toolkit Resources – General Information Section for a template</li> </ul>		Lead: Deadline:	
Hang up posters that promote tick checks and insect repellants near exits to the facility and near playgrounds, trails and fields		Lead: Deadline:	
Sent an email blast to parents, teachers, faculty and students (university level students) with information that promotes prevention <ul style="list-style-type: none"> <li>Reference the Toolkit Resources – General Information Section for a template</li> </ul>		Lead: Deadline:	
Put information on prevention in your quarterly newsletter <ul style="list-style-type: none"> <li>Reference the Toolkit Resources – General Information Section for a template</li> </ul>		Lead: Deadline:	
Put table tents with information on prevention in the cafeteria		Lead: Deadline:	
Include components of prevention into the curriculum or camp program		Lead: Deadline:	

<ul style="list-style-type: none"> <li>For example, if a class is being taught about ecosystems, include a segment on tickborne diseases and promote prevention</li> </ul>			
Post Lyme disease quiz to scrolling PowerPoint or TV screen in the cafeteria or waiting areas <ul style="list-style-type: none"> <li>Reference the Toolkit – Schools/Camps section</li> </ul>			
Educate trainers, athletic directors and coaches on prevention measures for athletes		Lead: Deadline:	
Educate maintenance and landscaper staff on prevention measures and make insect repellent available		Lead: Deadline:	
Educate individuals on areas where ticks have commonly been found		Lead: Deadline:	
Educate parents on Lyme disease and how to check their kids for ticks		Lead: Deadline:	
<b>Prevention</b>			
Promote the use of insect repellent to faculty, staff, children, students and parents prior to playing outdoors, playing sports or going for a hike		Lead: Deadline:	
Make insect repellent available for parents, campers, students, children, faculty and staff <ul style="list-style-type: none"> <li>Reference the Introduction for choosing insect repellents</li> </ul>		Lead: Deadline:	
Check students, children, campers, faculty and staff for ticks on their head/hairline and clothes when they are done playing outside or done hiking		Lead: Deadline:	
When taking students and campers hiking, stay in the middle of the path and avoid going into brush		Lead: Deadline:	
Prior to going on a hike or		Lead:	

playing near brush and wooded areas, ask parents to dress kids/campers in light clothing so you can easily check for ticks		Deadline:	
Prior to athletic games, promote the use of insect repellent to players		Lead: Deadline:	
Report found ticks to the appropriate staff member			
Maintain a log of where all ticks have been found on site to keep track of where ticks are most frequent		Lead: Deadline:	
<b>Tick Control in Fields, Playgrounds and Yards</b>			
Clear tall grasses and brush around buildings and at the edges of the playground or yard		Lead: Deadline:	
Place a 3ft wide barrier of wood chips and gravel between the edge of the playground or yard and the woods as well as around all play equipment		Lead: Deadline:	
Maintain the playground by mowing the lawns, raking up leaf litter and removing all trash		Lead: Deadline:	
Remove tick breeding grounds such as old mattresses, furniture or cars from the playground or yard		Lead: Deadline:	
Keep all play equipment away from the edges of wooded areas		Lead: Deadline:	
Keep all tick carriers such as mice, deer and stray dogs out of the playground or yard		Lead: Deadline:	
Consider safely spraying a small amount of acaricide once every May or June to keep ticks away		Lead: Deadline:	
<b>Situational Awareness</b>			
Check the CDC website at <a href="http://www.cdc.gov">www.cdc.gov</a> each spring for new information or educational materials that can be used		Lead: Deadline:	
Check the NH DHHS website at <a href="http://www.dhhs.state.nh.us/">http://www.dhhs.state.nh.us/</a>		Lead: Deadline:	

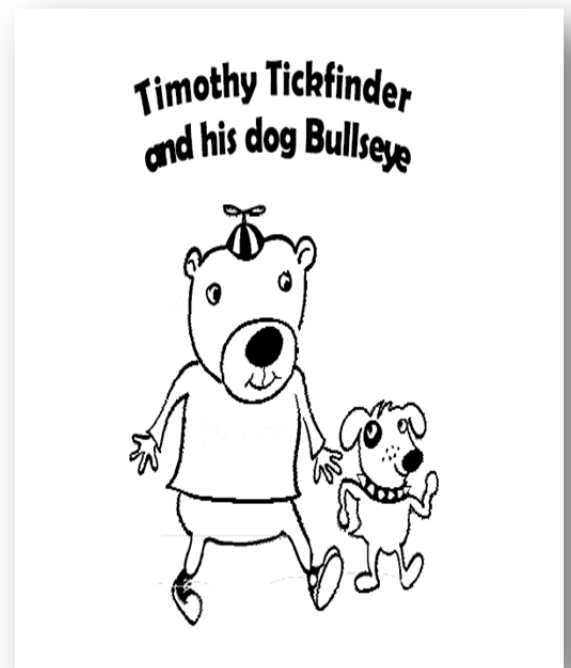
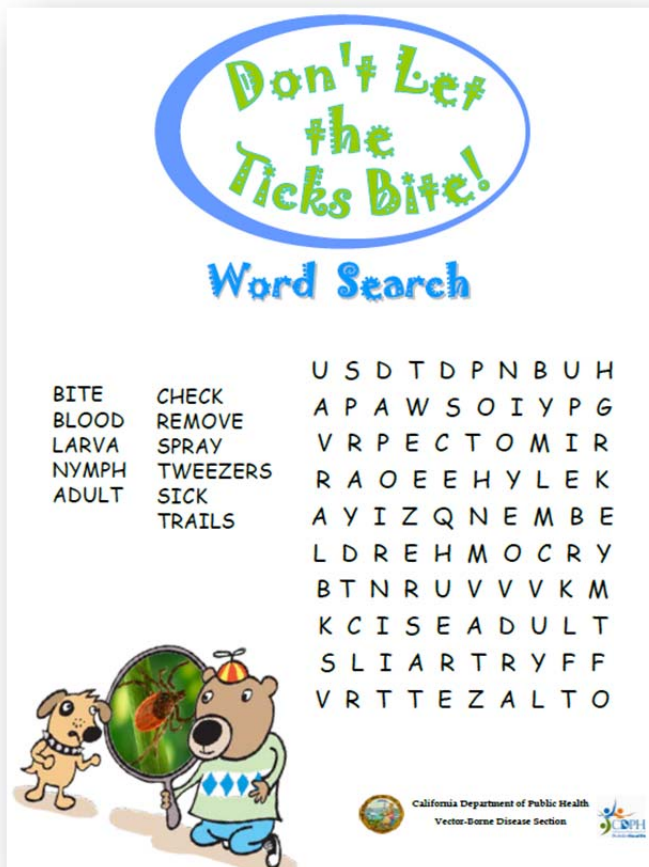
## Lyme Disease Poster and Bookmarks (PDF)

- Bookmark: <http://www.cdph.ca.gov/HealthInfo/discond/Documents/Ticksbookmark.pdf>
  - This bookmark can be handed out to children and students to use in their daily reading books. It gives easy and helpful information for kids on how to be aware of ticks, prevent being bitten and removing ticks safely.
- Poster: <http://www.cdph.ca.gov/HealthInfo/discond/Documents/Dontlettheticksbite.pdf>
  - This poster is designed for kids and can be hung on school/camp bulletin boards. It offers easy to read information on ticks and Lyme disease and contains engaging pictures for children.



## Coloring Pages and Word Search (PDF)

- Coloring Pages:  
<http://www.cdph.ca.gov/HealthInfo/discond/Documents/TimothyTickfinderColoringPages.pdf>
  - This coloring page can be used in classroom downtime or on a rainy day at camp to promote Lyme disease awareness amongst kids.
- Word Search: <http://www.cdph.ca.gov/HealthInfo/discond/Documents/DLTTBWordSearch.pdf>
  - This word search can be used as an educational material for kids in conjunction with other materials provided in this section of the toolkit to promote Lyme disease awareness amongst kids.





# Resources for Families and Individuals with Pets

Pets and Ticks..... 2

*Reducing the Risk of Transmission to pets*..... 2

CDC Guides for Parents:..... 3

CDC Guide for Pregnant Women ..... 4

CDC Crossword Puzzle for Kids ..... 5

## Pets and Ticks

Pets are extremely susceptible to tick bites and tick-borne diseases when they go outside. They also make great “vehicles” for ticks to access a home

### *Reducing the Risk of Transmission to pets*

- Check your pets daily for ticks, especially after being outside
- Remove any ticks immediately
- Watch for behavioral changes in your dog such as decreased appetite, limping and an increase in lethargy
- Ask your veterinarian to check for ticks at each exam
- Follow the steps to reducing ticks in your yard listed in the Resources for Community Wide Initiatives section of this toolkit
- Talk to your veterinarian about using tick preventatives, such as permethrin, on your pets
- If approved by a veterinarian use acaricides on dogs with caution
  - Cats are very sensitive to chemicals so always consult a veterinarian about using tick repellents on cats

\*For more information: [http://www.cdc.gov/lyme/prev/on\\_pets.html](http://www.cdc.gov/lyme/prev/on_pets.html)



## CDC Guides for Parents:

English:

### Lyme Disease Guide for Parents

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_Lymedisease\\_Parent.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_Lymedisease_Parent.pdf)

Spanish:

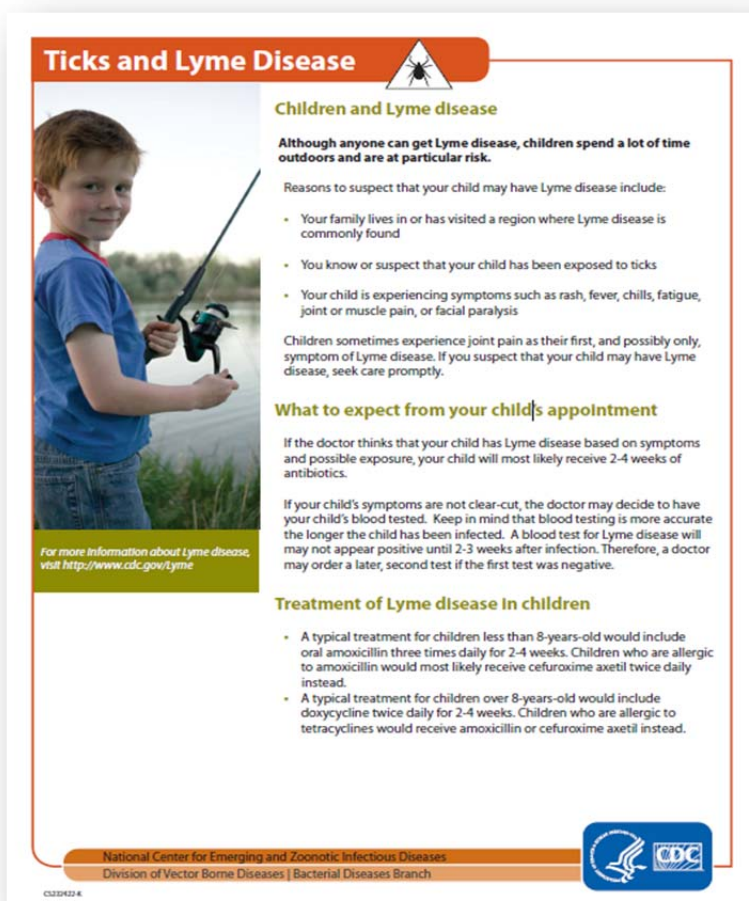
### Guía de la enfermedad de Lyme para los Padres

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_Lymedisease\\_Parent\\_SPANISH.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_Lymedisease_Parent_SPANISH.pdf)

Portuguese:

### Guia da doença de Lyme para Pais

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_ChildrenLymedisease\\_BrazilianPortuguese\\_FACTSheet.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_ChildrenLymedisease_BrazilianPortuguese_FACTSheet.pdf)



## CDC Guide for Pregnant Women

English:

### Lyme Disease and Pregnancy

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_Lyme%20disease\\_PregnantWoman\\_FACTSheet.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_Lyme%20disease_PregnantWoman_FACTSheet.pdf)

Spanish:

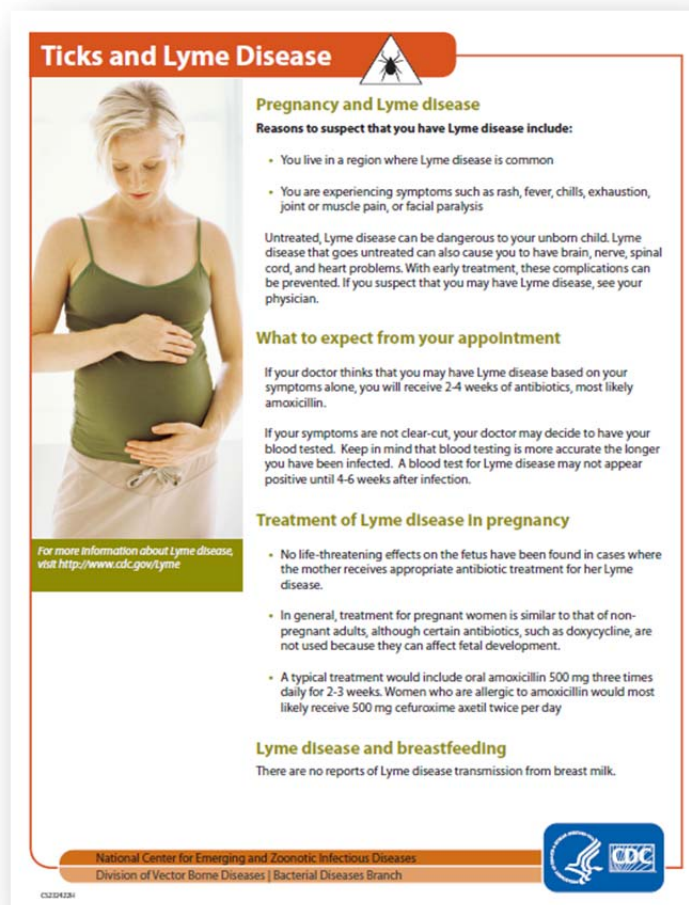
### Enfermedad de Lyme y el Embarazo

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_Lyme%20disease\\_PregnantWoman\\_FACTSheet\\_SPANISH.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_Lyme%20disease_PregnantWoman_FACTSheet_SPANISH.pdf)

Portuguese:

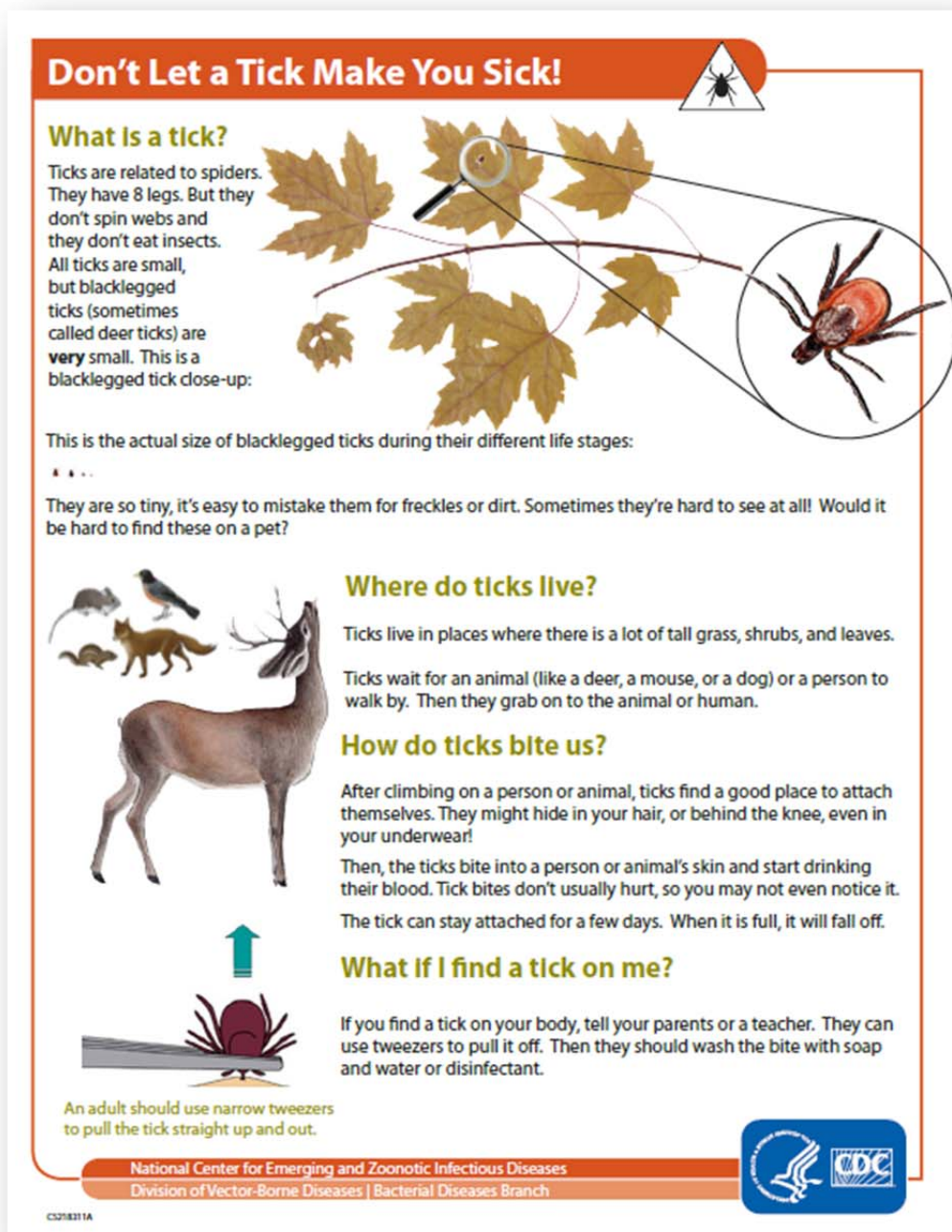
### Doença de Lyme e Gravidez

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_Lymedisease\\_PregnantWoman\\_BrazilianPortuguese\\_FACTSheet.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_Lymedisease_PregnantWoman_BrazilianPortuguese_FACTSheet.pdf)



## CDC Crossword Puzzle for Kids

- [http://www.cdc.gov/lyme/resources/toolkit/Final\\_LymeDiseaseCrossword\\_apr2010.pdf](http://www.cdc.gov/lyme/resources/toolkit/Final_LymeDiseaseCrossword_apr2010.pdf)
  - This crossword puzzle contains brief information on what ticks are, where they live and how to find them on your body. It can be completed with kids while talking about Lyme disease and the preventative methods listed throughout this toolkit that the family can take to reduce tick bites in the home



# Resources for Employers and Employees

Occupations at Risk..... 2

Recommendations for Employees ..... 2

Recommendations for Employers..... 3

NHDHHS Protect Yourself Where You Work..... 4

CDC Guide for Outdoor Workers ..... 5

Lyme Disease Prevention Checklist for Employers ..... 6



## Occupations at Risk

The following is a list of occupations that commonly see employees reporting cases of Lyme disease:

- Construction
- Landscaping
- Forestry
- Brush clearing
- Land surveying
- Farming
- Railroad work
- Oil field work
- Utility line work
- Park or wildlife management
- Other outdoor work

## Recommendations for Employees

The following are steps that employees can use to prevent contracting Lyme disease at work:

- Wear a hat and light-colored clothing that includes long-sleeved shirts and pants tucked into boots or socks
- Use insect repellents that provide long lasting protection
  - Make sure to use repellents that contain 20-30% DEET
  - Follow directions on label properly
- Use insecticides such as Permethrin for greater protection
- Check skin and clothes for ticks during breaks, at lunch and after work
- Place clothes in a hot dryer to destroy any missed ticks
- Learn the symptoms of Lyme disease
  - Seek medical attention if you believe you may have Lyme disease or if you believe a tick has been attached for longer than 24 hours.

\*For more information: <http://www.cdc.gov/niosh/topics/lyme/>

## Recommendations for Employers

The following are steps that employers can take to create a more informed and safe workplace

- Provide training for staff members that includes information about
  - The spread of Lyme disease
  - Risks of exposure to Lyme disease
  - How to protect yourself
  - How to report illnesses in the workplace
- Advise workers to wear light-colored, long-sleeved shirts, long pants, socks, and a hat
- Provide workers with insect repellents containing 20-30% DEET
- Have workers avoid working at sites with woods, bushes, tall grass, and leaf litter whenever possible
- When not possible: remove leaf litter, mow lawns and brush and control all rodent and deer activity

\*For more information: <http://www.cdc.gov/niosh/topics/lyme/>



Source: [http://www.sciencephoto.com/image/434040/530wm/F0043511-Workers\\_talking\\_at\\_construction\\_site-SPL.jpg](http://www.sciencephoto.com/image/434040/530wm/F0043511-Workers_talking_at_construction_site-SPL.jpg)

## NH DHHS Protect Yourself Where You Work

<http://www.dhhs.nh.gov/dphs/hsdm/ohs/documents/ticksbrief0614.pdf>

This is an issue brief on tick-borne diseases designed for outdoor workers, supervisors and safety personnel.



## Protect Yourself from Ticks Where you Work!

*This Issue Brief is specifically for outdoor workers, their supervisors, and workplace safety personnel.*

### Types of tick-borne diseases

#### What types of workers are at risk for tick bites?

At-risk occupations and job duties include, but are not limited to, the following:

- ⇒ Brush clearing workers
- ⇒ Construction workers
- ⇒ Landscapers
- ⇒ Farmers

Ticks may carry bacteria and pass them to humans and other warm-blooded mammals when they attach themselves for a blood meal. Lyme disease is the most commonly reported tick-borne disease in New Hampshire with approximately 1,689 (confirmed and probable) cases reported in 2010. This is an

Lyme disease data and maps by county and town are updated annually and are available at: <http://www.dhhs.nh.gov/dphs/cdcs/lyme/publications.htm>.

Lyme disease, babesiosis, anaplasmosis and Powassan virus are transmitted by the bite of the black-

attached to people. A single tick can be co-infected with any of the above pathogens and thus transmit multiple diseases during a single bite.

Lyme disease and other tick-borne diseases can be serious. It is important that you and your employer know how to prevent

## CDC Guide for Outdoor Workers

English:

### Lyme Disease and Outdoor Workers

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_Lyme%20disease\\_Outdoorworkers\\_FACTSheet.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_Lyme%20disease_Outdoorworkers_FACTSheet.pdf)

Spanish:

### Enfermedad de Lyme y trabajan al aire libre

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_Lyme%20disease\\_Outdoorworkers\\_FACTSheet\\_Spanish.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_Lyme%20disease_Outdoorworkers_FACTSheet_Spanish.pdf)

Portuguese:

### Doença de Lyme e trabalhadores ao ar livre

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_Lymedisease\\_BrazilianPortuguese\\_FACTSheet.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_Lymedisease_BrazilianPortuguese_FACTSheet.pdf)



## Lyme Disease Prevention Checklist for Employers

Use this tool to determine which actions you already take to promote Lyme disease prevention and which actions you can take at your organization. Place an "x" in the appropriate column as you fill out the checklist. For actions you want to consider implementing, identify the appropriate person in your organization that can complete the action and assign a timeline for completing the action.

Action Item	Already Being Done	Consider Implementing (Identify Lead for Action)	Not Applicable to my organization
Review the Lyme Prevention Toolkit for information and to become familiar with available resources		N/A	N/A
<b>Education</b>			
Post prevention tips on Facebook, Twitter and other social media sites <ul style="list-style-type: none"> <li>Reference the Toolkit Resources – General Information Section for a template</li> </ul>		Lead: Deadline:	
Hang up posters that promote tick checks and insect repellants near exits to the facility and near fields		Lead: Deadline:	
Sent an email blast to staff with information that promotes prevention <ul style="list-style-type: none"> <li>Reference the Toolkit Resources – General Information Section for a template</li> </ul>		Lead: Deadline:	
Put information on prevention in your quarterly newsletter <ul style="list-style-type: none"> <li>Reference the Toolkit Resources – General Information Section for a template</li> </ul>		Lead: Deadline:	
Put table tents with information on prevention in the cafeteria		Lead: Deadline:	
Include components of prevention into staff training		Lead: Deadline:	

Post Lyme disease quiz to scrolling PowerPoint or TV screen in the cafeteria or waiting areas <ul style="list-style-type: none"> <li>Reference the Toolkit – Schools/Camps section</li> </ul>			
Educate staff and workers on prevention measures		Lead: Deadline:	
<b>Tick Control Environment near the Facility</b>			
Clear tall grasses and brush around buildings		Lead: Deadline:	
Place a 3ft wide barrier of wood chips and gravel between the edge of the woods and the grounds		Lead: Deadline:	
Maintain the grounds by mowing the lawns, raking up leaf litter and removing all trash		Lead: Deadline:	
Remove tick breeding grounds such as old mattresses, furniture or cars from the grounds		Lead: Deadline:	
Keep all tick carriers such as mice, deer and stray dogs out of the grounds		Lead: Deadline:	
Consider safely spraying a small amount of acaricide once every May or June to keep ticks away		Lead: Deadline:	
<b>Situational Awareness</b>			
Check the CDC website at <a href="http://www.cdc.gov">www.cdc.gov</a> each spring for new information or educational materials that can be used		Lead: Deadline:	
Check the NH DHHS website at <a href="http://www.dhhs.state.nh.us/">http://www.dhhs.state.nh.us/</a> for new information on Lyme disease in New Hampshire		Lead: Deadline:	



# Resources for Golfers and Hikers

CDC Guide for Golfers ..... 2

CDC Guide for Hikers..... 3

## CDC Guide for Golfers

English: [http://www.cdc.gov/lyme/resources/toolkit/factsheets/Golfing\\_English.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/Golfing_English.pdf)

Spanish: [http://www.cdc.gov/lyme/resources/toolkit/factsheets/Golfing\\_Spanish.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/Golfing_Spanish.pdf)

### Ticks and Lyme Disease



For more information about Lyme disease, visit <http://www.cdc.gov/lyme>



#### How to prevent tick bites when golfing

**Ticks can spread disease, including Lyme disease. Protect yourself:**

- Use insect repellent that contains 20 - 30% DEET.
- Wear clothing that has been treated with permethrin.
- Take a shower as soon as you can after coming indoors.
- Look for ticks on your body. Ticks can hide under the armpits, behind the knees, in the hair, and in the groin.
- Put your clothes in the dryer on high heat for 60 minutes to kill any remaining ticks.

#### How to remove a tick

1. If a tick is attached to you, use fine-tipped tweezers to grasp the tick at the surface of your skin.
2. Pull the tick straight up and out. Don't twist or jerk the tick—this can cause the mouth parts to break off and stay in the skin. If this happens, remove the mouth parts with tweezers if you can. If not, leave them alone and let your skin heal.
3. Clean the bite and your hands with rubbing alcohol, an iodine scrub, or soap and water.
4. You may get a small bump or redness that goes away in 1-2 days, like a mosquito bite. This is not a sign that you have Lyme disease.

**Note:** Do not put hot matches, nail polish, or petroleum jelly on the tick to try to make it pull away from your skin.



If you remove a tick quickly (within 24 hours) you can greatly reduce your chances of getting Lyme disease.

National Center for Emerging and Zoonotic Infectious Diseases  
Division of Vector Borne Diseases | Bacterial Diseases Branch



## CDC Guide for Hikers


English:

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_Lyme%20disease\\_HikersCampers\\_FACT\\_Sheet.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_Lyme%20disease_HikersCampers_FACT_Sheet.pdf)

Spanish:

[http://www.cdc.gov/lyme/resources/toolkit/factsheets/11\\_222447A\\_Lymedisease\\_HikerCamper\\_FACT\\_Sht\\_Spanish.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/11_222447A_Lymedisease_HikerCamper_FACT_Sht_Spanish.pdf)

### Ticks and Lyme Disease



For more information about Lyme disease, visit <http://www.cdc.gov/lyme>

#### How to prevent tick bites when hiking and camping


**Ticks can spread disease, including Lyme disease. Protect yourself:**

- Use insect repellent that contains 20 - 30% DEET.
- Wear clothing that has been treated with permethrin.
- Take a shower as soon as you can after coming indoors.
- Look for ticks on your body. Ticks can hide under the armpits, behind the knees, in the hair, and in the groin.
- Put your clothes in the dryer on high heat for 60 minutes to kill any remaining ticks.

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Division of Vector Borne Diseases | Bacterial Diseases Branch



## Resources for Healthcare Professionals

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## Reporting a Lyme Disease Case in New Hampshire

Lyme disease is one of the many required reportable diseases in New Hampshire. To report a reportable disease to the New Hampshire Department of Health and Human Services, call 603-271-4496 or 1-800-852-3345 ext. 4496. After hours, call 603-271-5300 or 1-800-852-3345 ext. 5300. Forms can be faxed to 603-271-0545. Reports can be mailed to:

NH Department of Health and Human Services  
Division of Public Health Services  
Communicable Disease Control and Surveillance  
29 Hazen Drive, Concord, NH 03301-6504

### Lyme Reporting Form for NH:


<http://www.dhhs.nh.gov/dphs/cdcs/documents/lymediseasereport.pdf>

NEW HAMPSHIRE LYME DISEASE CASE REPORT FORM HEALTH CARE PROVIDER	
Patient's Name _____ Report Date _____ (Last Name) (First Name)	
Date of Birth _____ Age _____ <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Unknown	Race <input type="checkbox"/> White <input type="checkbox"/> African American <input type="checkbox"/> Asian <input type="checkbox"/> Hawaiian or Pacific Islander <input type="checkbox"/> Native Am./Alaskan Native <input type="checkbox"/> Other <input type="checkbox"/> Unknown
Address _____	
City / Town _____ County _____ State _____ Zip _____	
Home Phone _____ Work Phone _____	
Occupation _____	
Ethnicity <input type="checkbox"/> Hispanic <input type="checkbox"/> Not Hispanic <input type="checkbox"/> Unknown	
<b>SYMPTOMS AND SIGNS OF CURRENT EPISODE</b> (Please answer each question)	
Is this person being diagnosed with Lyme Disease? _____ <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date of symptom onset _____ Onset date unknown <input type="checkbox"/> Date of Lyme Disease diagnosis _____	
<b>DERMATOLOGIC:</b> Erythema migrans (physician diagnosed EM at least 5 cm in diameter)? _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
<b>RHEUMATOLOGIC:</b> Arthritis characterized by recurrent brief attacks of joint swelling? _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
<b>NEUROLOGIC:</b> Bell's palsy or other cranial neuritis? _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown Radiculoneuropathy? _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown Lymphocytic meningitis? _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown Encephalitis/Encephalomyelitis? _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown CSF tested for antibodies to <i>B. burgdorferi</i> ? _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown Antibody to <i>B. burgdorferi</i> higher in CSF than serum _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
<b>CARDIOLOGIC:</b> Acute onset 2 <sup>nd</sup> or 3 <sup>rd</sup> degree atrioventricular block? _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
Pregnant: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
Hospitalized: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If yes, where _____	
Treatment: <input type="checkbox"/> Doxycycline <input type="checkbox"/> Amoxicillin <input type="checkbox"/> Other: _____	
Duration of treatment in days: _____	
Has this patient been diagnosed with Lyme Disease prior to this diagnosis? <input type="checkbox"/> Yes, date (mm/yyyy) _____ <input type="checkbox"/> No <input type="checkbox"/> Unknown	
<b>EXPOSURE HISTORY</b>	
Tick Bite reported within 30 days of onset: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
In the 30 days prior to symptom onset, did this individual travel outside of NH: <input type="checkbox"/> Yes, out of state <input type="checkbox"/> Yes, out of country <input type="checkbox"/> No <input type="checkbox"/> Unknown	
County and state most likely exposed? _____	
<b>LABORATORY RESULTS</b> (Check all that apply)	
EIA/IFA: <input type="checkbox"/> Positive <input type="checkbox"/> Equivocal <input type="checkbox"/> Negative <input type="checkbox"/> Not done/Unknown Date if positive: _____	
Western Blot: <input type="checkbox"/> IgM Positive <input type="checkbox"/> IgM Negative <input type="checkbox"/> Not done/Unknown Date if positive: _____ <input type="checkbox"/> IgG Positive <input type="checkbox"/> IgG Negative <input type="checkbox"/> Not done/Unknown Date if positive: _____	
Culture Results/Other: _____	
<b>HEALTH CARE PROVIDER REPORTING INFORMATION:</b>	
Reported by _____	
Ordering Provider _____ Phone _____	
Provider Facility _____	
City/Town _____ State _____ Zip _____	
Mail or Fax to: NH Department of Health and Human Services, Bureau of Infectious Disease Control 29 Hazen Drive, Concord, NH 03301. Fax: (603) 271-0545, Phone: Hotline 1 (888) 836-4971. vMar14	
<b>For NH DHHS Staff Only</b>	
<b>Imported</b> <input type="checkbox"/> Acquired in NH <input type="checkbox"/> Acquired Outside US <input type="checkbox"/> Acquired in Another State <input type="checkbox"/> Unknown	
<b>Case Status</b> <input type="checkbox"/> Confirmed (meets CDC definitions) <input type="checkbox"/> Probable (meets CDC definitions) <input type="checkbox"/> Suspected (meets CDC definitions) <input type="checkbox"/> Not A Case <input type="checkbox"/> Out of state Notes: _____	




## Complete list of Reportable Diseases:

<http://www.dhhs.nh.gov/dphs/cdcs/documents/reportablediseases.pdf>



# New Hampshire

## Department of Health and Human Services



**Reportable Diseases 2008**

**Disease Reporting Guidelines**


Acquired Immune Deficiency Syndrome (AIDS)  
 Anaplasmosis [*Anaplasma phagocytophilum*]  
 Anthrax [*Bacillus anthracis*]  
 Arboviral infection, including EEE & WNV\*  
 Babesiosis [*Babesia microti*]  
 Botulism [*Clostridium botulinum*]  
 Brucellosis [*Brucella abortus*]  
 Campylobacteriosis [*Campylobacter* species]  
 Chlamydial infection [*Chlamydia trachomatis*]  
 Cholera [*Vibrio cholerae*]  
 Coccidioidomycosis [*Coccidioides immitis*]  
 Creutzfeldt-Jakob Disease\*  
 Cryptosporidiosis [*Cryptosporidium parvum*]  
 Cyclospora infection [*Cyclospora cayentanensis*]  
 Diphtheria [*Corynebacterium diphtheriae*]  
 Ehrlichiosis [*Ehrlichia* species]  
 Escherichia coli O157 infection and other shiga toxin producing *E. coli*  
 Giardiasis [*Giardia lamblia*]  
 Gonorrhea [*Neisseria gonorrhoeae*]  
 Haemophilus influenzae, invasive disease, sterile site\*  
 Hantavirus Pulmonary Syndrome [Hantavirus]  
 Hemolytic Uremic Syndrome (HUS)  
 Hepatitis, viral: A\*, B, E, G  
 Hepatitis, viral: positive B surface antigen in a pregnant woman  
 Human Immunodeficiency Virus (HIV), including perinatal exposure  
 Human Immunodeficiency Virus-related CD4+ counts and all viral loads  
 Legionellosis [*Legionella pneumophila*]  
 Leprosy, Hansen's disease [*Mycobacterium leprae*]  
 Listeriosis [*Listeria monocytogenes*]  
 Lyme disease [*Borrelia burgdorferi*]  
 Malaria [*Plasmodium* species]  
 Measles [Rubeola]  
 Mumps\*  
 Neisseria meningitidis, invasive disease, sterile site\*  
 Pertussis [*Bordetella pertussis*]  
 Plague [*Yersinia pestis*]  
 Pneumococcal disease, invasive [*Streptococcus pneumoniae*]  
 Pneumocystis pneumonia [*Pneumocystis jiroveci* formerly *carinii*]  
 Poliomyelitis [Polio]  
 Psittacosis [*Chlamydophila psittaci*]  
 Rabies in humans or animals\*  
 Rocky Mountain Spotted Fever [*Rickettsia rickettsii*]  
 Rubella, including Congenital Rubella Syndrome\*  
 Salmonellosis [*Salmonella* species] (report *S. Typhi*\* within 24 hours)  
 Shigellosis [*Shigella* species]  
 Streptococcus Group A/B, invasive disease [*S. pyogenes/agalactiae*]  
 Syphilis, including Congenital Syphilis Syndrome [*Treponema pallidum*]  
 Tetanus [*Clostridium tetani*]  
 Toxic-Shock Syndrome (TSS) [staphylococcal or staphylococcal]  
 Trichinosis [*Trichinella spiralis*]  
 Tuberculosis disease [*Mycobacterium tuberculosis*]  
 Tuberculosis infection, latent  
 Tularemia [*Francisella tularensis*]  
 Typhoid fever [*Salmonella Typhi*]  
 Typhus [*Rickettsia prowazekii*]  
 Varicella\*  
 Vibriosis [any *Vibrio* species]  
 Vancomycin Resistant Enterococci (VRE)  
 Vancomycin Resistant Staphylococcus aureus (VRSA)\*  
 Yersiniosis [*Yersinia enterocolitica*]  
 Any suspect outbreak, cluster of illness, or unusual occurrence of disease that may pose a threat to the public's health must be reported within 24 hours of recognition\*

✓ All suspect and confirmed cases must be reported within 72 hours of diagnosis or suspicion of diagnosis  
 ✓ Diseases with an asterisk (\*) and in red must be reported within 24 hours of diagnosis or suspicion of diagnosis  
 ✓ Reports are handled under strict confidentiality standards

**Disease Reports Shall Include:**

- Name of the disease
- Name of the person reporting
- Physician name and phone number
- Patient information
  - ☐ Name
  - ☐ Date of birth and age
  - ☐ Sex
  - ☐ Race
  - ☐ Ethnicity
  - ☐ Address
  - ☐ Telephone number
  - ☐ Occupation
  - ☐ Place of employment
  - ☐ Date of onset
5. Diagnostic test information
  - ☐ Type of test performed
  - ☐ Specimen type(s)
  - ☐ Date
  - ☐ Results
6. Treatment
  - ☐ Date
  - ☐ Drug
  - ☐ Dosage

**How to Report a Disease:**



**PHONE**

Office: 1-603-271-4496


Toll Free Office: 1-800-852-3345 ext. 4496

Hotline: 1-888-836-4971

**After Hours Response: 1-603-271-5300**

**Toll Free After Hours: 1-800-852-3345 ext. 5300**

**FAX: 1-603-271-0545 Do Not FAX HIV/AIDS Reports**



**MAIL**

NH Department of Health and Human Services  
 Division of Public Health Services  
 Communicable Disease Control and Surveillance  
 29 Hazen Drive, Concord, NH 03301-6504

**www.dhhs.state.nh.us/DHHS/CDCS**




## New Hampshire Health Alert Network (HAN) Messages

The NH DHHS utilizes the NH Health Alert Network to provide timely messages to Healthcare providers. The NH Health Alert Network (NH HAN) is a 24/7/365 comprehensive system for public health emergency notifications and alerts in response to events or incidents of public health significance. It includes a network of individuals and the software and hardware needed to create messages and respond to communications around public health incidents. For more information on receiving Health Alerts, contact the NH HAN Lyme Coordinator at [Health.Alert@nh.gov](mailto:Health.Alert@nh.gov).


- General Information on HAN: <http://www.dhhs.nh.gov/dphs/cdcs/alerts/>
- To access archived HAN messages: <http://www.dhhs.nh.gov/dphs/cdcs/alerts/han.htm>
- NH DHHS Tick-borne Disease Guidance from 2014: <http://www.dhhs.nh.gov/dphs/cdcs/alerts/documents/lymedisease-2014.pdf>

**THIS IS AN OFFICIAL NH DHHS HEALTH ALERT**

Distributed by the NH Health Alert Network  
[Health.Alert@nh.gov](mailto:Health.Alert@nh.gov)  
May 19, 2014, 1400 EDT (2:00 PM EDT)  
NH-HAN 20140519



NH DIVISION OF  
Public Health Services  
Improving health, preventing disease, reducing costs for all  
Department of Health and Human Services



**Lyme Disease and Other Tickborne Diseases in New Hampshire**

**NH Division of Public Health Services (NH DPHS) recommends:**

1. Recognition that NH continues to have one of the highest rates of Lyme disease in the nation and ~60% of deer ticks sampled in NH are infected with *Borrelia burgdorferi*, the bacteria that causes Lyme disease.
2. Prevention of disease through use of DEET insect repellent, wearing long pants and sleeves outdoors, and daily tick checks followed by prompt removal of any ticks.
3. Diagnosis of early Lyme disease when erythema migrans is present based solely on clinical suspicion because diagnostic serologies (including IgM) may not yet be positive.
4. Awareness that recent reports of sudden cardiac death attributed to Lyme disease carditis highlight the importance of prompt diagnosis and treatment of Lyme disease.
5. Report all tickborne diseases, confirmed or suspected, to the NH DPHS Bureau of Infectious Disease Control at 603-271-4496 (after hours 1-800-852-3345, x5300).

**Background:**

Lyme disease (*Borrelia burgdorferi*), babesiosis (*Babesia microti* and other species), anaplasmosis (*Anaplasma phagocytophilum*), and Powassan virus are transmitted by the bite of the deer tick (*Ixodes scapularis*), also known as the black-legged tick. Although these ticks have a 2-year life cycle, the greatest risk for human acquisition of tickborne diseases is between May and August when the aggressive nymph stage of the deer tick is active. Nymphs are very small (< 2mm) and easy to miss unless they become engorged with blood.

**Epidemiology:**

Over the last decade, reported Lyme disease cases have increased significantly in NH. In 2013, 1,889 cases (confirmed and probable) were reported. The highest disease rates occurred in Rockingham, Strafford and Hillsborough counties, respectively. Compared to national data from 2012 (the most recent available), the Centers for Disease Control and Prevention (CDC) reports that NH has the highest incidence rate of Lyme disease in the United States (75.9 confirmed cases per 100,000 population). NH Lyme disease data and maps by county and town from 2006-2013 are available at <http://www.dhhs.nh.gov/dphs/cdcs/lyme/publications.htm>. In 2013, 88 cases of anaplasmosis, 23 cases of babesiosis, and the first case of locally-acquired Powassan virus infection were also reported.

The risk of Lyme disease for any individual depends on their outdoor activities and the abundance of infected ticks. Tick surveillance performed during 2007-2010 in NH counties showed that >50% of ticks tested in most counties were infected with the bacteria causing Lyme disease with the exception of slightly lower rates (40%) in Belknap and Carroll, and very low numbers of ticks collected in Coos County, precluding prevalence assessment. *Babesia* and *Anaplasma* have been detected in ticks in NH, though reliable prevalence data for these pathogens in ticks is not available.

# Tick-borne Diseases of the United States: A Reference Manual for Health Care Providers

- <http://www.cdc.gov/lyme/resources/TickborneDiseases.pdf>
  - This manual can be used by healthcare providers to identify different species of ticks, find out where each type of tick is most common in the continental U.S. and review general information of common tick-borne diseases.

## Lyme Disease

**AGENT**  
*Borrelia burgdorferi*

**INCUBATION PERIOD:** 3–30 days

**SIGNS AND SYMPTOMS**

**Localized Stage<sup>1</sup>**

- Erythema migrans (EM)—red ring-like or homogenous expanding rash; classic rash not present in all cases. See examples on following pages.
- Flu-like symptoms—malaise, headache, fever, myalgia, arthralgia
- Lymphadenopathy

**Disseminated Stage**

- Multiple secondary annular rashes
- Flu-like symptoms
- Lymphadenopathy

**Rheumatologic Manifestations**

- Transient, migratory arthritis and effusion in one or multiple joints
- Migratory pain in tendons, bursae, muscle, and bones
- Baker's cyst
- If untreated, arthritis may recur in same or different joints

**Cardiac Manifestations**

- Conduction abnormalities, e.g. atrio-ventricular node block
- Myocarditis, pericarditis

**Neurologic Manifestations**

- Bell's palsy or other cranial neuropathy
- Meningitis
- Motor and sensory radiculoneuropathy, mononeuritis multiplex
- Subtle cognitive difficulties
- Encephalitis, encephalomyelitis, subtle encephalopathy, pseudotumor cerebri (all rare)

**Additional Manifestations**

- Conjunctivitis, keratitis, uveitis
- Mild hepatitis
- Splenomegaly

**WHERE FOUND**

Lyme disease is most frequently reported from the upper midwestern and northeastern U.S. Some cases are also reported in northern California, Oregon, and Washington. In 2010, 94% of Lyme disease cases were reported from 12 states: Connecticut, Delaware, Maine, Maryland, Massachusetts, Minnesota, New Jersey, New Hampshire, New York, Pennsylvania, Virginia, and Wisconsin.

<sup>1</sup>During the **localized** (early) stage of illness, Lyme disease may be diagnosed clinically in patients who present with an EM rash. Serologic tests may be insensitive at this stage. During **disseminated** disease, however, serologic tests are usually positive.

**GENERAL LABORATORY FINDINGS**

- Elevated erythrocyte sedimentation rate
- Mildly elevated hepatic transaminases
- Microscopic hematuria or proteinuria
- In Lyme meningitis, CSF typically shows lymphocytic pleocytosis, slightly elevated protein, and normal glucose.

**LABORATORY DIAGNOSIS**

- Demonstration of diagnostic IgM or IgG antibodies in serum. A IgG-IgM testing protocol is recommended—EIA or IFA should be performed first; if positive or equivocal it is followed by a Western blot.
- Isolation of organism from a clinical specimen.
- In suspected Lyme meningitis, testing for intrathecal IgM or IgG antibodies may be helpful.

**NOTES ON SEROLOGIC TESTS FOR LYME DISEASE**

- Serologic tests are insensitive during the first few weeks of infection. During this stage, patients with an EM rash may be diagnosed clinically. While not necessary, acute and convalescent titers may be helpful in some cases.
- In persons with illness > 1 month, only IgG testing should be performed (not IgM). A positive IgM test alone is not sufficient to diagnose current disease.
- Due to antibody persistence, single positive serologic test results cannot distinguish between active and past infection.
- Serologic tests cannot be used to measure treatment response.
- Enzyme immunoassay (EIA) and immunofluorescence assay (IFA) tests have low specificity and may yield false-positive results. They may cross-react with antibodies to commensal or pathogenic spirochetes, some viral infections (e.g., varicella, Epstein-Barr virus), or certain autoimmune diseases (e.g., lupus).

**LYME DISEASE OR STARI?**

An erythema migrans-like rash has also been described in humans following bites of the lone star tick, *Amblyomma americanum*. This condition has been named Southern Tick-Associated Rash Illness (STARI). Although the rash may be accompanied by flu-like symptoms, long-term sequelae have not been reported. Because the cause of STARI is unknown, diagnostic blood tests are not available.

Lone star ticks can be found from central Texas and Oklahoma eastward across the southern states and along the Atlantic coast as far north as Maine.

It is not known whether antibiotic treatment is necessary or beneficial for patients with STARI. Nevertheless, because STARI resembles early Lyme disease, physicians often treat patients with the same antibiotics recommended for Lyme disease.

**NOTE:** Coinfection with *B. microti* and/or *A. phagocytophilum* should be considered in patients who present with initial symptoms that are more severe than are commonly observed with Lyme disease alone, especially in those who have high-grade fever for more than 48 hours despite appropriate antibiotic therapy or who have unexplained leukopenia, thrombocytopenia, or anemia. Coinfection might also be considered in patients whose erythema migrans skin lesion has resolved but have persistent flu-like symptoms.

**LABS**

**20**

**21**

Lyme Disease

Rocky Mountain Spotted Fever

Tularemia

Other Tickborne Diseases

Tick Bites/Prevention

## Centers for Disease Control and Prevention Resources for Clinicians

Includes information on diagnostics, treatments and learning tools.

- <http://www.cdc.gov/lyme/healthcare/clinicians.html>

The screenshot shows the CDC website's Lyme Disease section for healthcare professionals. The page has a blue header with the CDC logo and navigation links. A left sidebar lists various topics under 'Lyme Disease', with 'Clinicians' highlighted. The main content area is titled 'Resources for Clinicians' and includes sections for 'Diagnosis, Treatment and Testing' and 'Learning Tools'. The 'Diagnosis, Treatment and Testing' section lists resources such as 'Treatment', '2006 IDSA Treatment Guidelines', 'Two-tier testing explained', 'Tests that are NOT recommended', and a 'New Handbook'. The 'Learning Tools' section features a video titled 'Recognizing Lyme Carditis' by Joseph D. Forrester, MD, MSc. A right sidebar contains contact information for the CDC and links to print the page or get email updates.

CDC Home  
Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

### Lyme Disease

- Lyme Disease
- Preventing tick bites
- Removing a tick
- Transmission
- Signs and symptoms
- Diagnosis and testing
- Treatment
- Statistics
- Post-treatment Lyme disease syndrome
- Lyme disease FAQ
- Additional Resources
- Info for Healthcare Professionals
- Clinicians**
- Public Health Officials
- Veterinarians
- Tool kit
- Lyme disease quiz

[Lyme Disease > Info for Healthcare Professionals](#)

[Recommend](#) [Tweet](#) [Share](#)

### Resources for Clinicians

#### Diagnosis, Treatment and Testing

- Treatment
- 2006 IDSA Treatment Guidelines
- Two-tier testing explained
- Tests that are NOT recommended (including CD57, urine antigen testng, etc.)
- **New Handbook** – Tickborne Diseases of the United States: A Reference Manual for Health Care Providers, Second Edition. [PDF - 21 pages]

#### Learning Tools

##### Videos

**Recognizing Lyme Carditis**  
CDC Expert Commentary, January 2014

**Southern Tick-Associated Rash Illness -- When a Bull's-**

**On this Page**

- Diagnosis, Treatment, and Testing
- Learning Tools
- CME for Clinicians
- Lyme Disease Self-Assessment
- Case Definition and Report Forms

**Contact Us:**

Centers for Disease Control and Prevention  
Bacterial Diseases Branch  
Foothills Campus  
Fort Collins, CO 80522  
800-CDC-INFO (800-232-4636)  
TTY: (888) 232-6348  
[Contact CDC-INFO](#)

[Print page](#)  
[Get email updates](#)



## 2006 IDSA Treatment Guidelines

- <http://cid.oxfordjournals.org/content/43/9/1089.full>
  - This is an updated set of guidelines that can be used by healthcare providers to assess, treat and prevent tick-borne diseases.

The screenshot displays the article page for "The Clinical Assessment, Treatment, and Prevention of Lyme Disease, Human Granulocytic Anaplasmosis, and Babesiosis: Clinical Practice Guidelines by the Infectious Diseases Society of America". The article is published in *Clinical Infectious Diseases*, volume 43, issue 9, pages 1089-1134, in 2006. The authors listed are Gary P. Wormser, Raymond J. Dattwyler, Eugene D. Shapiro, John J. Halperin, Allen C. Steere, Mark S. Klempner, Peter J. Krause, Johan S. Bakken, Franc Strle, Gerold Stanek, Linda Bockenstedt, Durland Fish, J. Stephen Dumler, and Robert B. Nadelman. The abstract states that these updated guidelines replace the 2000 version and provide evidence-based recommendations for the management of Lyme disease, human granulocytic anaplasmosis, and babesiosis. The page includes a table of contents, a search bar, and various navigation and sharing options. The current issue is dated August 15, 2014, issue 59 (4).

**The Clinical Assessment, Treatment, and Prevention of Lyme Disease, Human Granulocytic Anaplasmosis, and Babesiosis: Clinical Practice Guidelines by the Infectious Diseases Society of America**

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**Abstract**

Evidence-based guidelines for the management of patients with Lyme disease, human granulocytic anaplasmosis (formerly known as human granulocytic ehrlichiosis), and babesiosis were prepared by an expert panel of the Infectious Diseases Society of America. These updated guidelines replace the previous treatment guidelines published in 2000 (*Clin Infect Dis* 2000; 31[Suppl 1]:1-14). The guidelines are intended for use by health care providers who care for patients who either have these infections or may be at risk for them. For each of these *Ixodes* tickborne infections, information is provided about prevention, epidemiology, clinical manifestations, diagnosis, and treatment. Tables list the doses and durations of antimicrobial therapy recommended for treatment and prevention of Lyme disease and provide a partial list of therapies to be avoided. A definition of post-Lyme disease syndrome is proposed.

**Executive Summary**

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**This Article**

*Clin Infect Dis.* (2006) 43 (9): 1089-1134.  
doi: 10.1086/508667

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## Continuing Medical Education for Clinicians

- As a service to clinicians, CDC has supported the development of an online CME Case Study Course on the Clinical Assessment, Treatment, and Prevention of Lyme Disease. This free, interactive course consists of a series of case studies designed to educate clinicians regarding the proper diagnosis and treatment of Lyme disease. Each case is accredited for .25 CME credits, for a maximum of 1.5 CME. There is no cost for these credits.
  - <http://lymecourse.idsociety.org/>
- The National Association of School Nurses presents an online course titled “Tick-borne Illness: Prevention, Assessment and Care” that focuses on clinical care of tick-borne diseases in school and camp settings. CNE is available.
  - <http://bit.ly/1rCgUW5>

## Lyme Disease Self -Assessment

- From the American College of Physicians (ACP) Initiative on Lyme Disease--an online quiz containing six clinical scenarios regarding the evaluation and treatment of Lyme disease.
  - <http://smartmedicine.acponline.org/content.aspx?gbosId=62>